

# SHARP SERVICE MANUAL

PDSM58000180K



## Personal Computer **MZ-80K**

### FEATURES

- The MZ-80K is a full-fledged personal microcomputer equipped with 8-bit microprocessor (Z-80) and it can meet a variety of applications like hobbies, educations, office works, controls (of apparatus in every industrial field), etc.
- It is a compact desk-top type, itself a simplified unit including CPU board, CRT display, cassette tape recorder and keyboard all together.
- Speaker (3 octaves) and clock function are built in.
- Applicable Languages (BASIC, MACHINE LANGUAGE, ASSEMBLER etc.) are changed easily with variations of tape mode: a free selection of them is possible according to the purposes of users.
- Memory extension is allowed up to 48K bytes in the board.

**SHARP CORPORATION**

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### Caution in Service

- \* Maintain the safety and protecting ability of the apparatus after service.
- \* High voltage shall not be rised to excess voltage so as to prevent this apparatus from the extra X-ray radiation.



# SPECIFICATIONS

## ■ General

CPU	Z-80	Clock Function:	Built in
Memory	Monitor ROM; 4K bytes RAM; 20K bytes (dynamic RAM) Memory extension; 48K bytes (max.)	Editor function	Cursor control; "up", "down", "right", "left", "home", "clear home" Edit key, Delete key
Display	10" CRT (black/white), 8 x 8 dot matrix, Characters; 1000 (40 characters x 25 lines)	Power supply	AC 220V $\pm 10\%$ , 50 Hz AC 240V $\pm 10\%$ , 50 Hz (for UK)
Cassette	Standard audio cassette tape Data transfer speed; 1200 bits/sec. Data transfer system; SHARP PWM	Power consumption	Approx. 45W
Sound output	400mW (max.)	Temperature	Operating temp.; 0°C to 35°C Storage temp.; -15°C to 60°C
Keys layout	Number; 78 keys ASCII standard (alphabet capital letter, figures), Small letter, Graphic	Humidity	Lower than 80° during operation
		Weight	Approx. 13 kg
		Dimensions	410(W) x 270(H) x 470(D)mm
		Music function	Built in


## ■ CPU Board Section (DCPU-0006PAZZ)

CPU	Z-80; 1 pc.	Programmable counter	1 pc.
ROM	Monitor; 1 pcs. (4K bytes) Character generator; 1 pcs. (2K bytes)	Programmable peripheral interface	1 pc.
RAM	Standard; 16K dynamic RAM; 8 pcs. (16K bytes) 4K dynamic RAM; 8 pcs. (4K bytes) Video RAM; 2 pcs. (1K bytes)	Other ICs	53 pcs.

## ■ Power Supply Section (DBOXD0004PAZZ), (DBOX0005PAZZ ----- for UK)

Input	AC 220V $\pm 10\%$ , 50Hz AC 240V $\pm 10\%$ , 50Hz (for UK)
Output	DC 12V, 1.6A max. DC 5V, 1.6A max. DC -5V, 0.2A max.

## ■ Display Section (DUTT0004PAZZ)

I. General specifications		II. Electrical specifications	
Size	10"	Video output	40Vp-p standard (35Vp-p limit)
Frequency	60Hz (vertical), 15.75kHz (horizontal) 15.75kHz (horizontal)	Resolution	Horizontal  These patterns must be clear-cut.
Power source	DC 12V, 1.1A $\pm$ 10%	Non-linearity distortion	Horizontal; $\pm$ 8% ( $\pm$ 14% max.) Vertical; $\pm$ 8% ( $\pm$ 12% max.)
Picture tube	Quick start type (3 sec.) 240NB4; 10"90° deflection explosion proof type Heater; 12V, 75mA	Geometrical distortion	Pincushion dist.; 1% (2% max.) Barrel dist.; 1% (2% max.) Trapezoidal dist.; 1% (2% max.) Parallelogram dist.; 1° (2.5° max.)
IC	2 pcs.	High voltage	Zero beam; 11.0kV (10.0kV, min., 12.0kV, max.)
Transistor	5 pcs.		
Diodes	9 pcs.	Power supply	DC12.0V, 1.05A (1.2A max.)
Sound output	400mW max. (400 Hz) Speaker 8cm, round dynamic type (32 $\Omega$ )	Working range	12V $\pm$ 10%
		Scan size	Horizontal; 10% (15% max.) Vertical; 10% (15% max.)
Control knobs	Volume, V-Hold, Contrast, H-Hold, Brightness, Focus	Horizontal lock-in range	$\pm$ 300 Hz ( $\pm$ 100Hz)
		Vertical lock-in range	-12 Hz (-6 Hz limit)
Working temperature	-10°C to 50°C	Audio frequency characteristic	400 Hz (0dB) -10dB $\pm$ 4dB at 100 Hz -12dB $\pm$ 4dB at 10kHz
		Sound maximum output	400mW at 400 Hz (350mW min.)

## ■ Cassette tape recorder Section (KTRC-0004PAZZ)

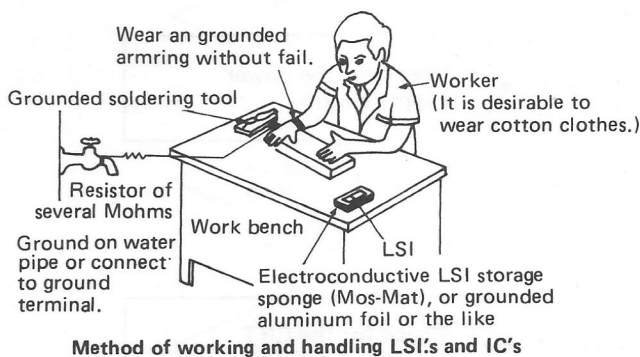
System	PWM recording	Biasing	DC system
Power source	5V $\pm$ 0.25V (rated)	Erasing	DC system
Rated amperage	Wait; 2mA Record; 70mA (TEAC test tape) Playback; 7mA (TEAC test tape)	Playback sensitivity	1m sec. to 500 $\mu$ sec. (standard)
		Input level	Below 0.4V ("L") Over 2.0V ("H")
Semiconductors	4 transistors 1 IC 4 diodes	Input impedance	Over 10k $\Omega$ (record jack)
		Output level	Below 0.4V ("L") Over 2.0V ("H")
Applied tape	From C30 to C120	Working temperature	-10°C to 50°C
Tape speed	4.75 cm/sec.		
Track	2-track monaural type	Storage temperature	-25°C to 70°C
Motor	Electronic governor motor (12V)		

\* Specifications subject to change without prior notice.

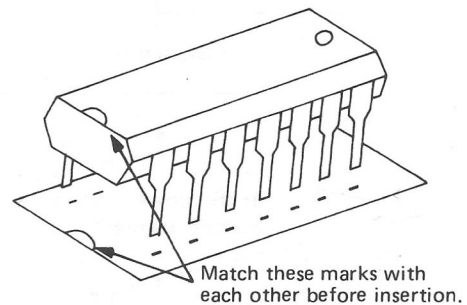
## Precautions on Handling LSI's and IC's

LSI's and IC's used in the MZ-80K are semiconductor integrated circuits whose basic element is MOS FET. The IC's, so poor in static electricity or leakage current from soldering tool, are liable to suffer breakdown. It is essential therefore to read the following instructions carefully and handle them properly.

- ① Ground your body before handling LSI's or IC's. Grounding must be made through a resistor of several Mohms for avoiding danger. Note that if possible, you wear cotton gloves and working clothes, but not chemical fiber ones easily charged with static electricity.



- ⑤ When inserting LSI's or IC's, don't mistake their inserting direction unconditionally. Reverse insertion damages them.



- ② When putting LSI's on a work bench during repair, lay grounded aluminum foil or the like superior in electric conductivity under them.

- ③ Use a grounded soldering tool free from leakage current. Even if current leaks out to the tip of soldering tool, gate insulation layer is protected by the action of protective diode. However, too much leakage current, which is caused by the tip in direct contact with power supply, for instance, may break the protective diode itself. Therefore, never fail to use a soldering tool free from leakage current.

A low-voltage soldering tool (6V, 12W) is optimal.

- ④ When inserting LSI's or IC's into the printed wiring board, avoid touching their pins directly, but hold their black plastic packages.

- ⑥ When storing and transporting an LSI or IC separately, wrap it with aluminum foil or insert into electroconductive sponge (Mos-Mat) to maintain terminals at the same potential.

- ⑦ Storage temperature of LSI is  $-20$  to  $+70^{\circ}\text{C}$ , and that of IC  $-40$  to  $+125^{\circ}\text{C}$ . It is recommended, however, to store them at a temperature near room temperature if possible. Avoid storing them on a place extremely high or low in humidity.

- ⑧ Be careful to refrain from giving an unreasonable mechanical impact to LSI's or IC's, or from giving an unreasonable force to lead wires.

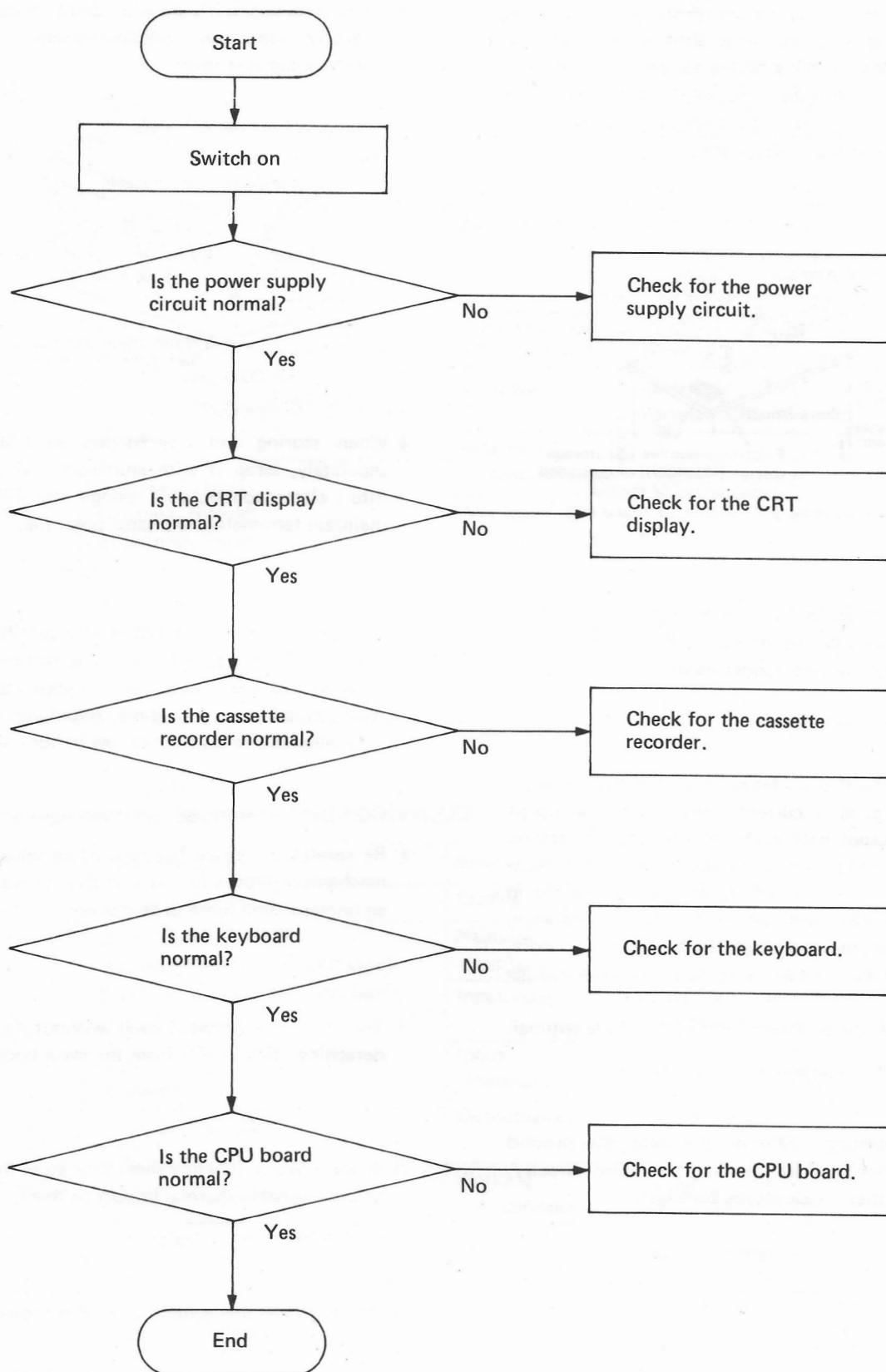
- ⑨ Turn off the power switch without fail before detaching LSI's or IC's from the main body.

- ⑩ Solder LSI's or IC's in a short time so as to prevent an unseasonable thermal impact to them.



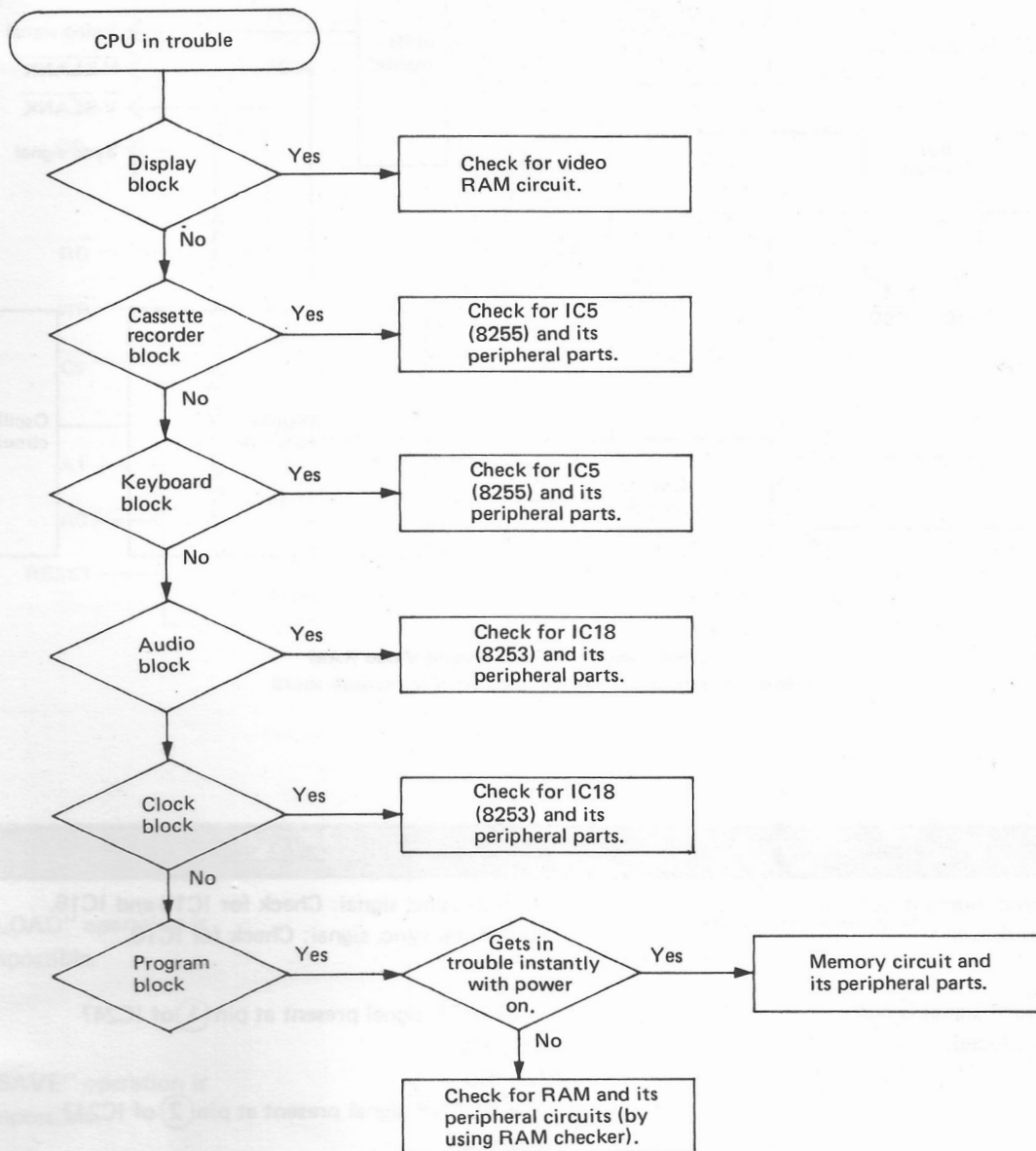
## TROUBLE SHOOTING GUIDE

The machine comprises five main units, CPU board, display, cassette tape recorder, keyboard, and power supply circuits. For a quick solution to most operating difficulties, first consult the chart below to find which section of the machine is subjected to the trouble, and next to do the checkings according to more detailed instructions given in the succeeding pages.



## CPU BOARD SECTION

The CPU board is composed of the following six blocks. When it gets in trouble, first locate which block is concerned with the trouble, and next try to check for its corresponding circuits; the wiring diagrams of every block will be shown separately.



### ■ Checking methods of each circuit

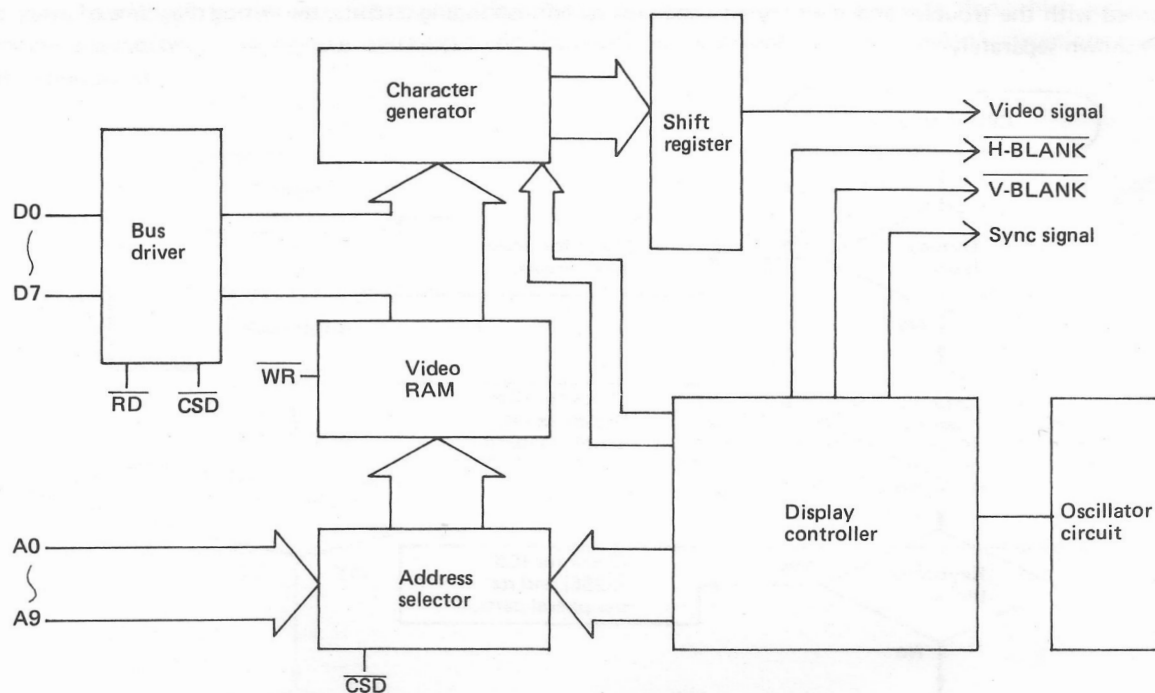
#### 1. By touching IC insulating parts by fingers:

- If they seem too hot by heat generation; IC is defective, IC load is heavy or components are touching each other — ROM and V-RAM are exempted from this checking, however.
- If a circuitry state is changed to another; Soldering is poor, socket contact is improper, or printed-wiring is erroneous.

#### 2. By using a synchroscope:

- If the relation between input and output of TTL IC is illogical, this means defective IC gate.
- Check if the voltage level of TTL IC is as specified: High level; over 2.4V, Low level; below 0.5V.

## ■ Display Block

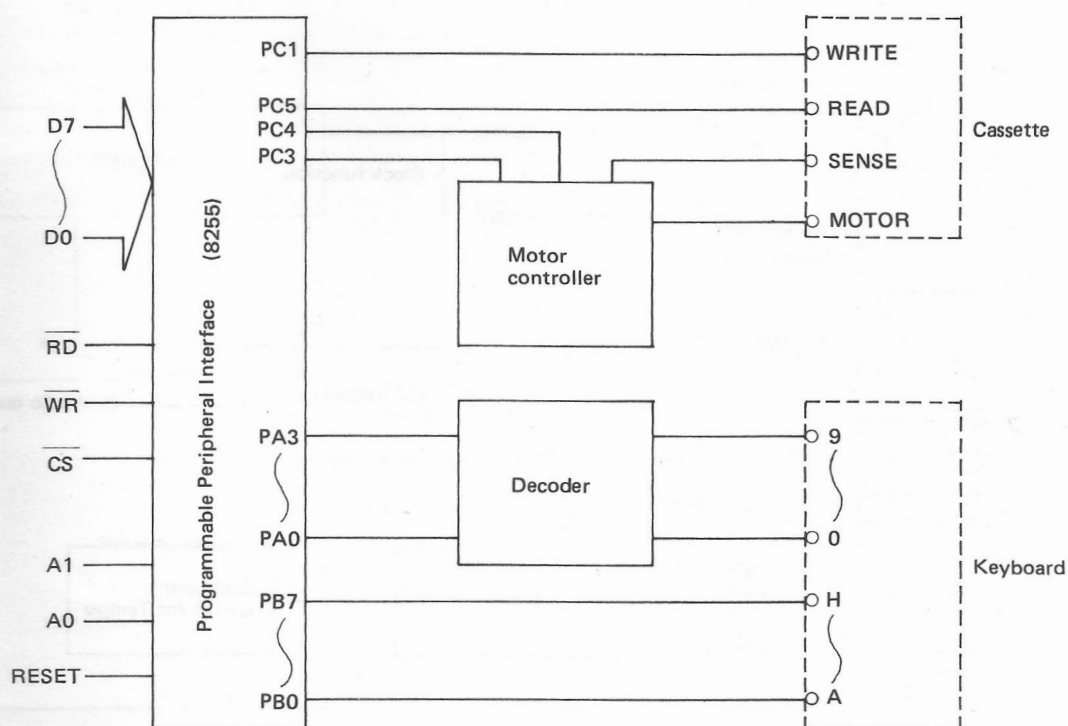


Block Diagram of Parts around Video RAM

Problem	Check Point
1. Sync. signal is not produced.	Vertical sync. signal: Check for IC15 and IC16. Horizontal sync. signal: Check for IC10.
2. Video signal is not produced.	Is $\overline{V-GATE}$ signal present at pin ① of IC24? Yes; IC24 No; IC5 Is $\overline{V-BLANK}$ signal present at pin ② of IC24? Yes; IC24 No; IC20 Is $\overline{H-BLANK}$ signal present at pin ⑬ of IC17? Yes; IC17, IC3 No; IC15 Is output signal present at pin ② of IC17? Yes; IC17, IC3 No; IC29
3. Displayed character(s) is partly invisible.	Check for IC29 and CG.
4. The display is positionally deviated.	Check for sync. signal circuit.



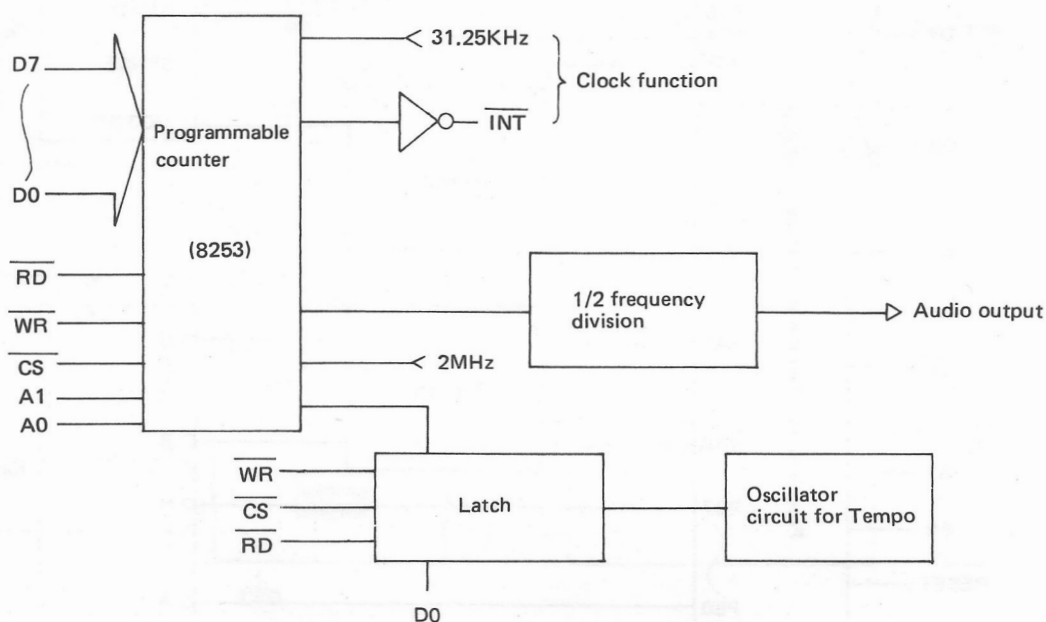
# ■ Cassette recorder/Keyboard Block



Block diagram of Parts around Cassette recorder/Keyboard.

Problem	Check Point
1. "LOAD" operation is impossible.	Is output signal present at pin ④ of IC4? Yes; IC5 No; IC4
2. "SAVE" operation is impossible.	Is output signal present at pin ⑮ of IC5? Yes; IC4 No; IC5
3. Motor doesn't rotate.	Is voltage at pin ⑥ of IC2 at "low" level? Yes; IC3, Q1, Q2 No; IC2, IC24, IC4, IC5
4. Motor doesn't stop.	Is voltage at pin ⑥ of IC2 at "high" level? Yes; IC3, Q1, Q2 No; IC2, IC24, IC4, IC5
5. Key input is ineffective.	Check for IC5 and IC6.

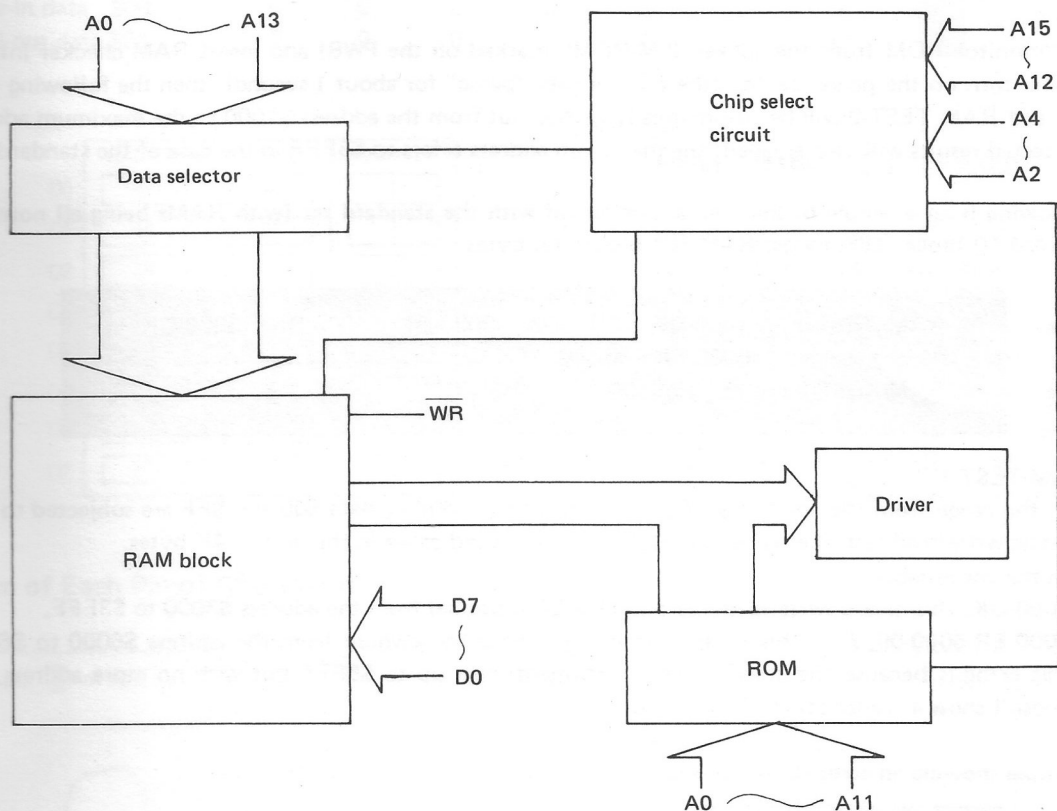
## ■ Audio/Clock Block



Block Diagram of Parts around Audio/Clock Block

Problem	Check
1. No sound is produced.	Is output signal present at pin ⑩ of IC18? Yes; IC12, IC3 No; IC18
2. Sound is distorted.	Check for IC12 and IC18.
3. Tempo is abnormal.	Check for IC13.
4. Clock function is abnormal.	Check for IC18.

# ■ Memory Circuit Block



Block Diagram of Parts around Memory Circuit

Problem	Check Point
1. Reproduced picture shows "panic".	Check for the following: ROM, IC46, CG, IC43 Address bus line; A0 to A15 (IC44, IC45) Data bus line; D0 to D7 (IC36, IC37, IC50) Control line; IC35 RAM (by using RAM checker*), IC52, IC53, IC56
2. Error display or misoperation is caused as a result of program execution.	RAM
3. Cursor disappears.	IC46, IC1
4. Returns to "MONITOR SP-1002."	RAM
5. Error is caused after a long operation.	RAM



### \* How to Use RAM Checker

Remove monitor ROM from the socket ("M-ROM" marked on the PWB) and insert RAM checker into the socket and turn on the power switch (the picture gets "panic" for about 1 second): then the following RAM TEST-1 and RAM TEST-2 will be automatically carried out from the address \$1000 to the maximum address and the tested results will be displayed: the maximum address refers to \$5FFF in the case of the standard set.

The following is an example of the testing performed with the standard set (with RAMs being all normal).

Note: RAM (I) block, 16K bytes; RAM (II) block, 4K bytes

RAM TEST-1	1000-OK	2000-OK	3000-OK	4000-OK	5000-OK
	6000-ER-6000-00, 7F,				
RAM TEST-2	00	FF	00	FF	F0 OK

#### 1) RAM TEST-1

In the range from the address \$1000 to the maximum address, data \$00 and \$FF are subjected to automatic write/read test; if error is caused, "ER" mark is indicated in the unit of 4K bytes.

In the above table,

**3000-OK:** this means write/read operation has been normal from the address \$3000 to \$3FFF.

**6000-ER-6000-00, 7F:** this means there exists error somewhere from the address \$6000 to \$6FFF; this error is because the standard set is provided with up to \$5FFF but with no more address, so it doesn't show a malfunction of RAM itself.

An example showing an error really caused:

2000-ER-235B-00, 01
---------------------

An error is caused in the addresses \$2000s; namely, although data \$00 has been written in the address \$235B, its read-out data is \$01.

#### 2) RAM TEST-2

Write/read test is carried out with the following data.

- Write-in data \$00 (from the address \$1000 to the maximum address)
- Write-in data \$FF (from the address \$1000 to the maximum address)
- Write-in data \$00 (from the maximum address to the address \$1000)
- Write-in data \$FF (from the maximum address to the address \$1000)
- Write-in data \$F0 and \$0F to be entered alternately (from the address \$1000 to the maximum address and vice versa).

The above table (RAM TEST-2) shows all the items (a) thru (e) are normal – the indications "00", "FF", "00", "FF" and "F0" correspond to (a) thru (e) respectively.

An example showing an error really caused:

RAM TEST-2	00	FF	00	ER-23FF-01
------------	----	----	----	------------

From the above, it can be seen that the tests (a) and (b) are both normal and that although data \$00 in the test (c) has been written in the address \$23FF, its read-out data is \$01, which means that an error has been caused.

In this way, which RAM block (I, II or III) has been subjected to the error is first located, and then so does which RAM component having undergone the error, by the respective information given by the RAM tester. In the above example, the display of "\$23FF" means RAM (I) block is in trouble, and the display of read-out data "\$01" (with respect to write-in data "\$00") shows RAM 1 of the block (I) is defective.

	D7	D6	D5	D4	D3	D2	D1	D0	
Write-in data \$00	0	0	0	0	0	0	0	0	← Error to occur
Read-out data \$01	0	0	0	0	0	0	0	1	

	RAM(Ⅲ)	RAM(Ⅱ)	RAM(Ⅰ)
D0	17	9	1
D1	18	10	2
D2	19	11	3
D3	20	12	4
D4	21	13	5
D5	22	14	6
D6	23	15	7
D7	24	16	8

## RAM (I)

\$1000 ~ \$4FFF (with 16KRAM)

## RAM (II)

\$5000 ~ \$8FFF (with 16KRAM)

\$5000 ~ \$5FFF (with 4KRAM)

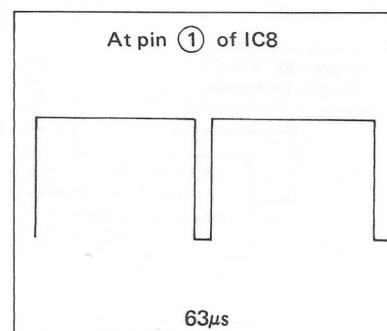
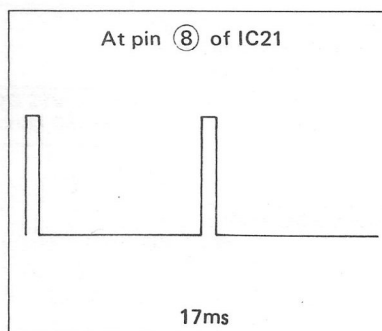
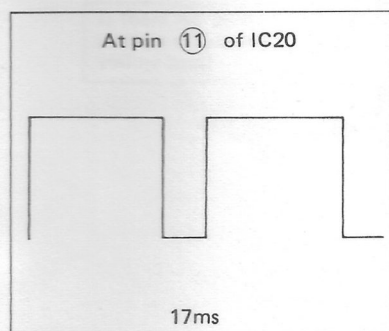
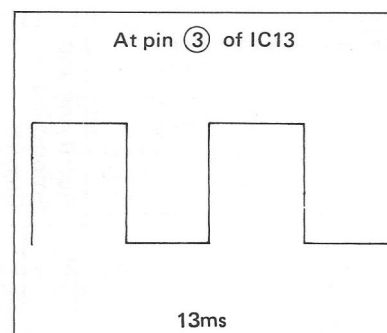
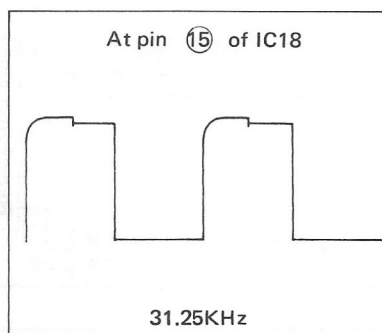
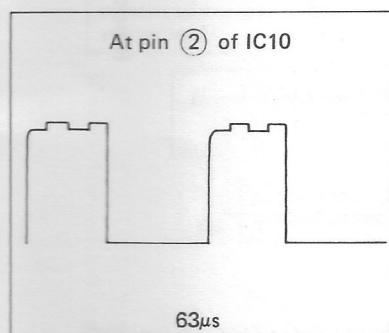
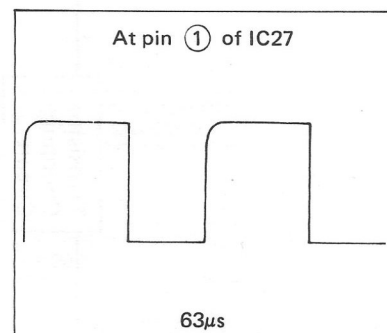
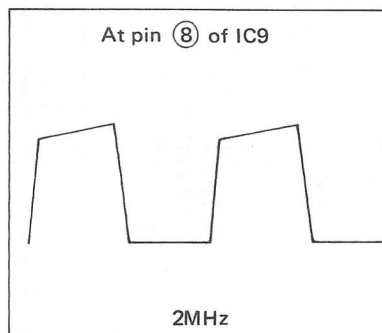
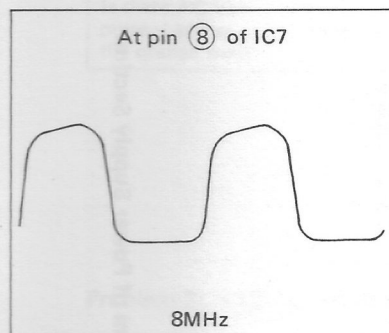
## RAM (III)

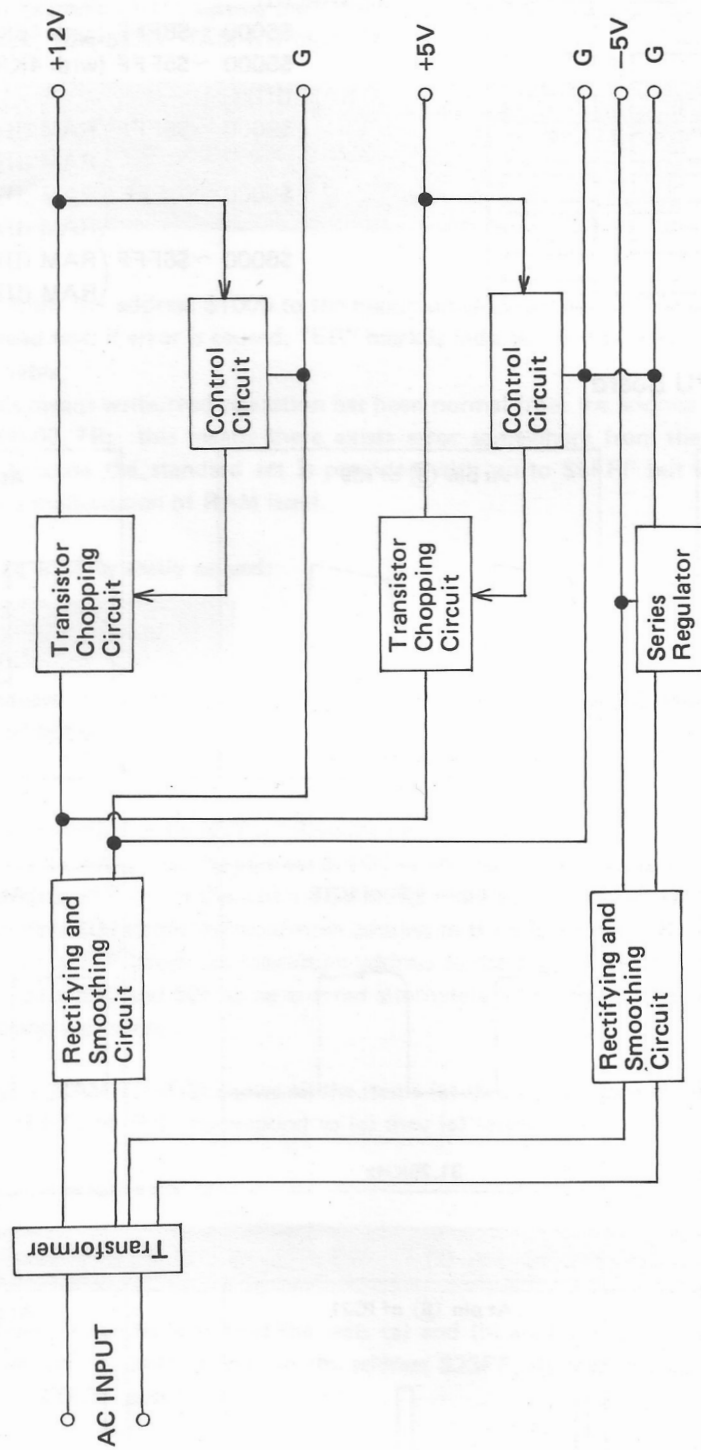
\$9000 ~ \$9FFF (RAM (II) 16KRAM  
RAM (III) 4KRAM)

\$9000 ~ \$CFFF (RAM (II) 16KRAM  
RAM (III) 16KRAM)

\$6000 ~ \$6FFF (RAM (II) 4KRAM  
RAM (III) 4KRAM)

## ■ Waveform of Each Pin of CPU Board



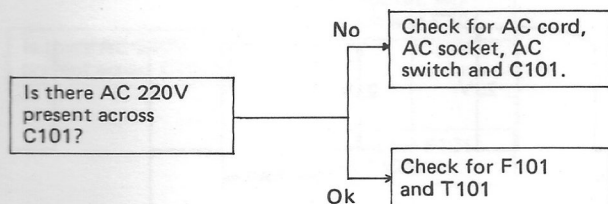
**POWER SUPPLY SECTION**

Block Diagram of Power Supply Section

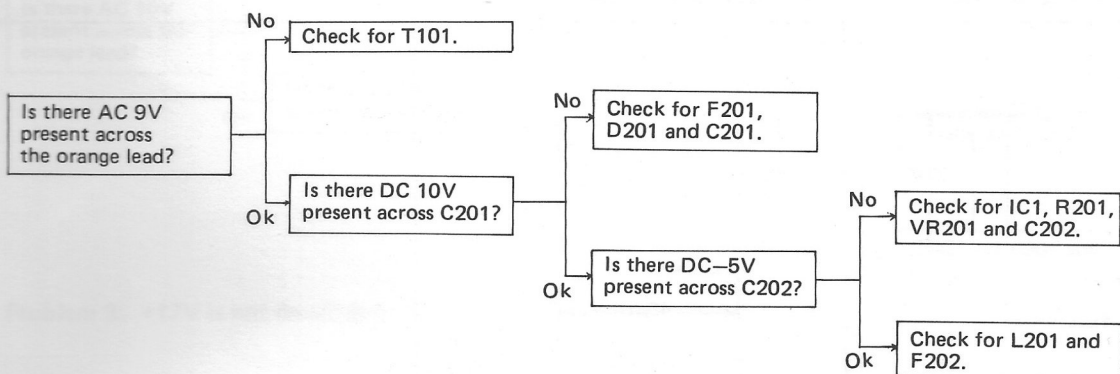


## ■ Trouble Shooting Chart (DBOXD0004PAZZ)

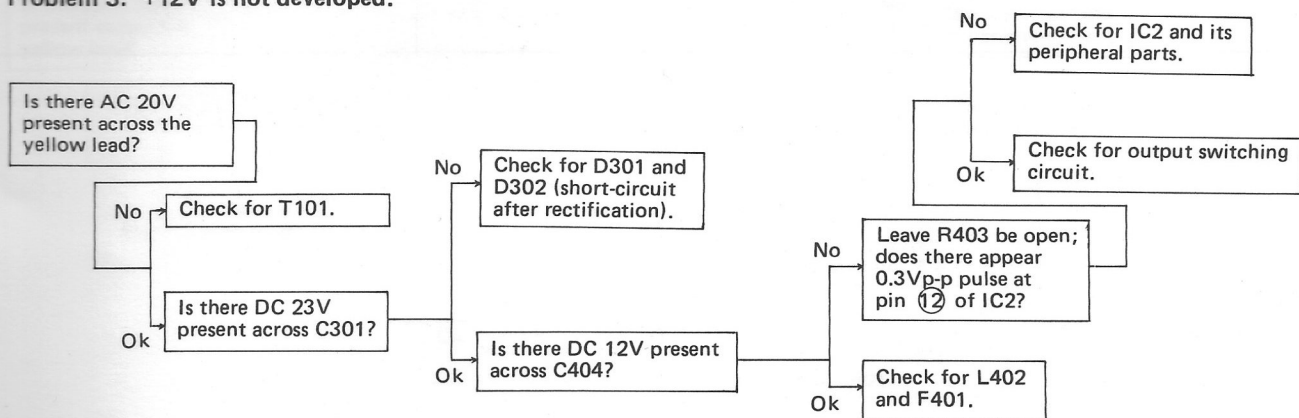
### Problem 1: No voltage appears at any output terminal.



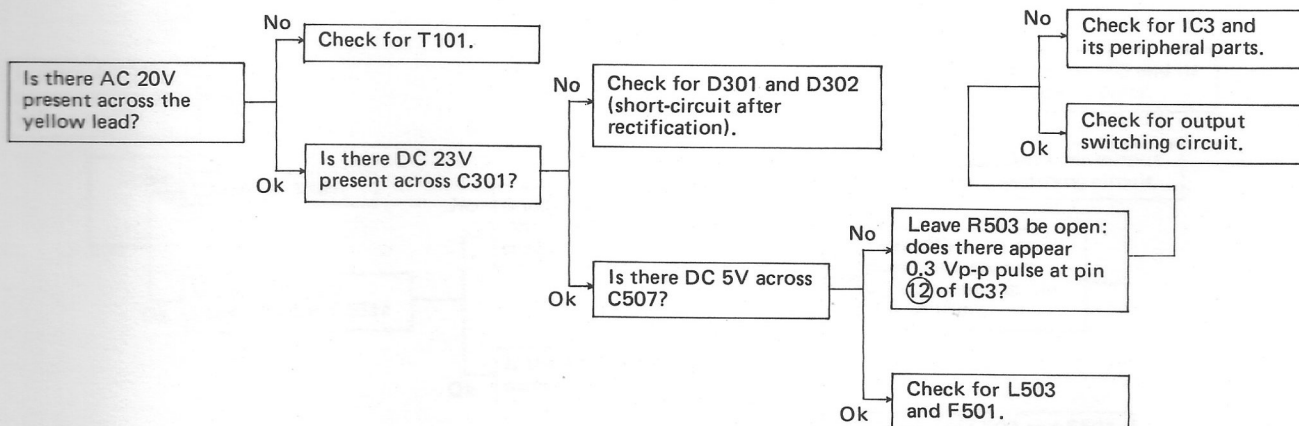
### Problem 2: -5V is not developed.



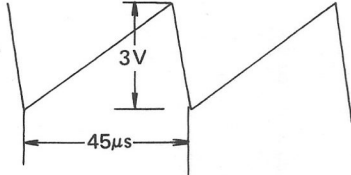
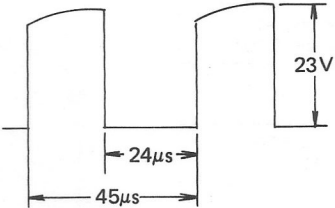
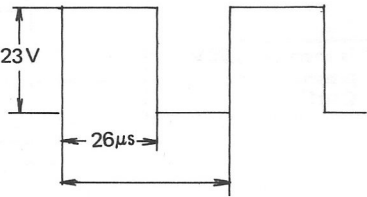
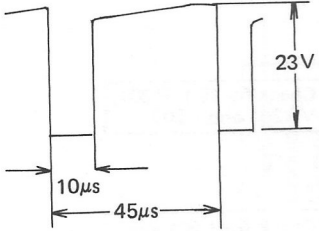
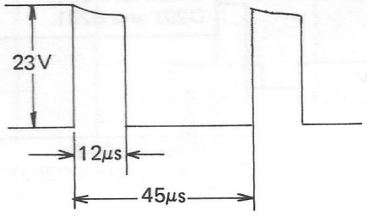
### Problem 3: +12V is not developed.



### Problem 4: +5V is not developed.

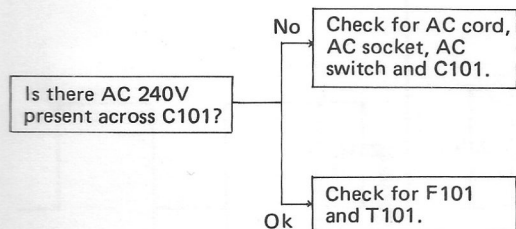


# ■ Waveforms of Each Parts

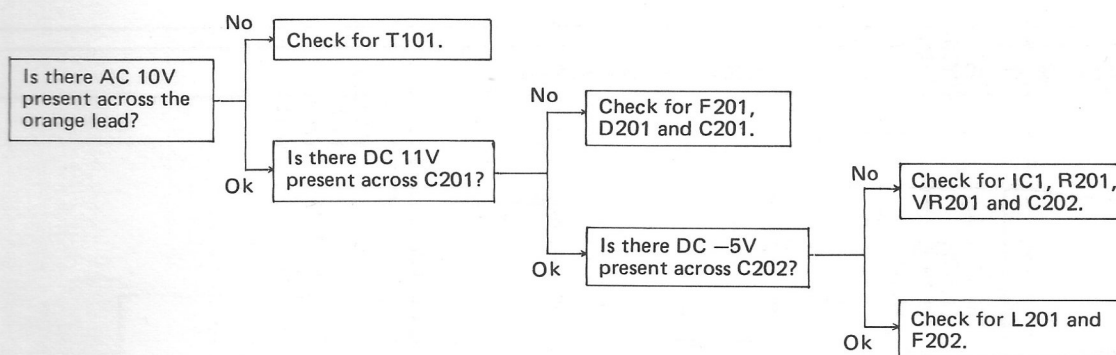
Waveform of pin ⑦ of IC2 and pin ② of IC3.	Waveform of pin ⑫ of IC2	Q401 collector waveform
		
Waveform of pin ⑫ of IC3	Q501 collector waveform	
		

## ■ Trouble Shooting Chart (DBOXD0005PAZZ ----- for UK)

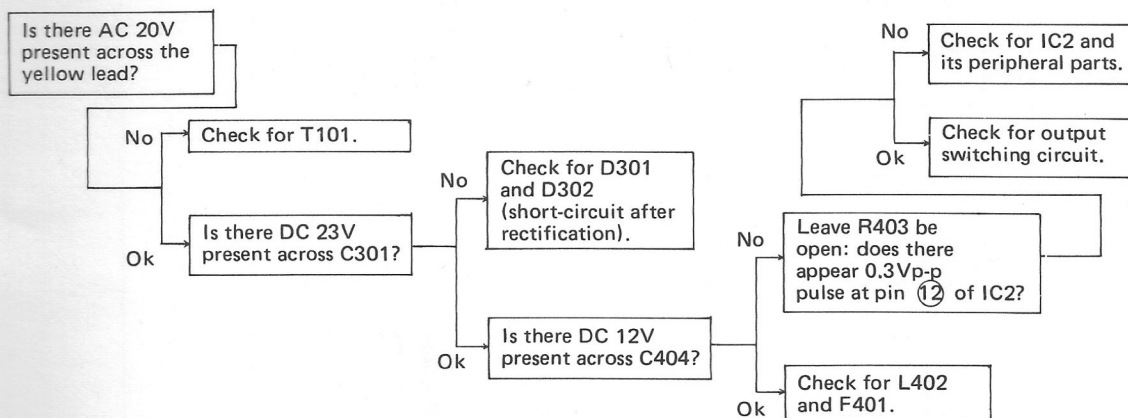
### Problem 1: No voltage appears at any output terminal.



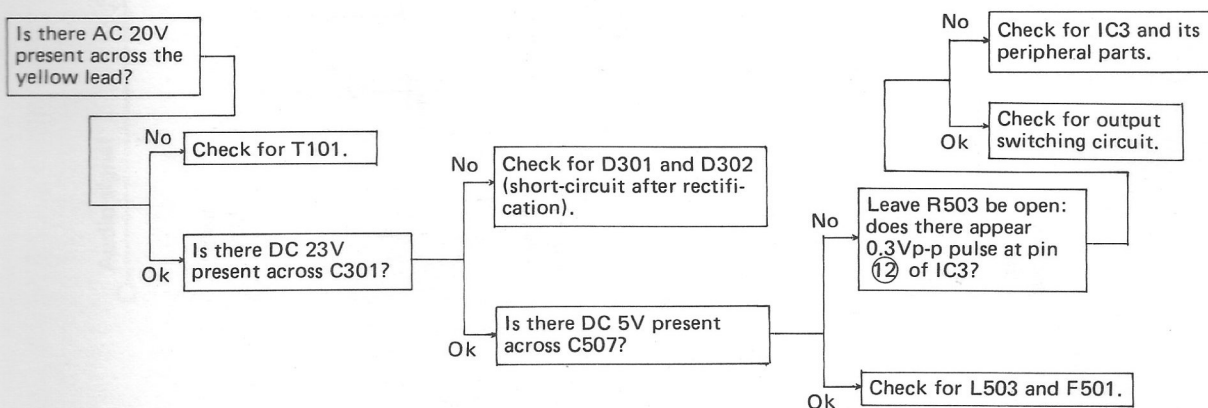
### Problem 2: -5V is not developed.



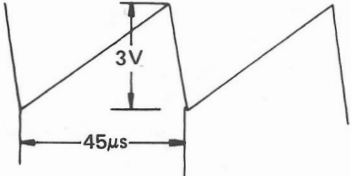
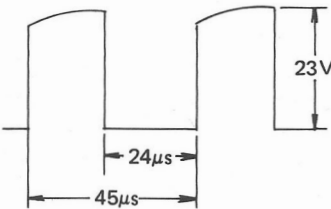
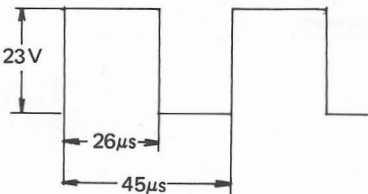
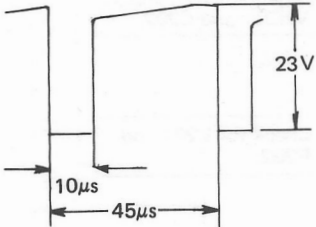
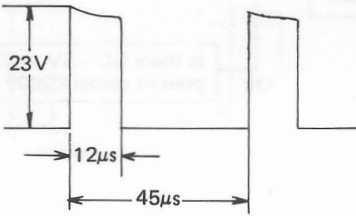
### Problem 3: +12V is not developed.



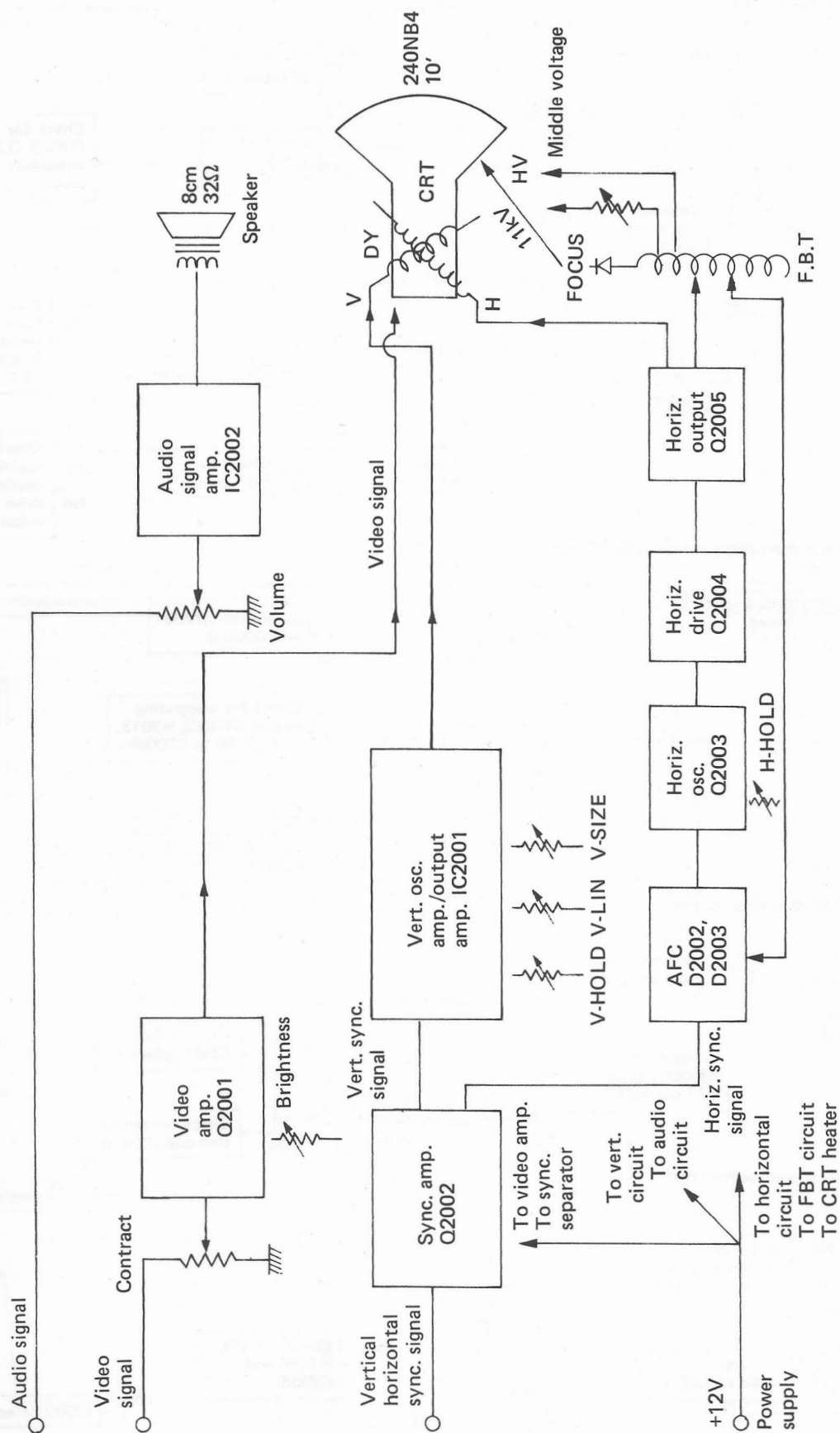
### Problem 4: +5V is not developed.



# ■ Waveforms of Each Parts

Waveform of pin ⑦ of IC2 and pin ② of IC3.	Waveform of pin ⑫ of IC2	Q401 collector waveform
		
Waveform of pin ⑫ of IC3	Q501 collector waveform	
		

# DISPLAY SECTION

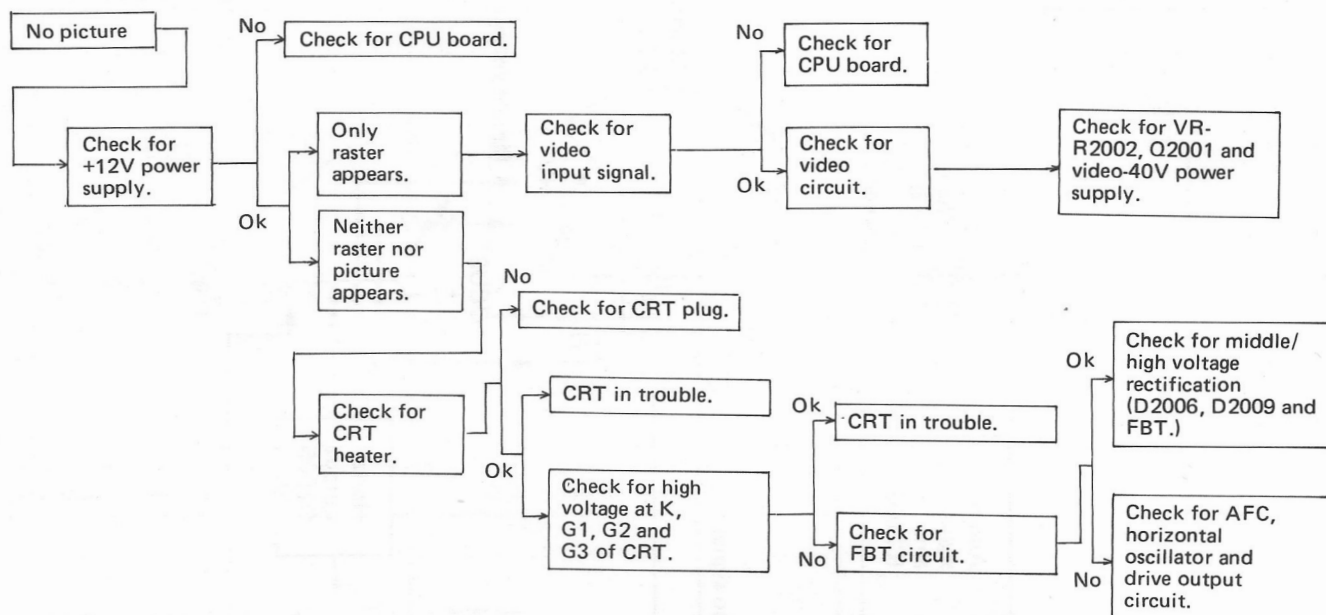


Block Diagram of Display Section

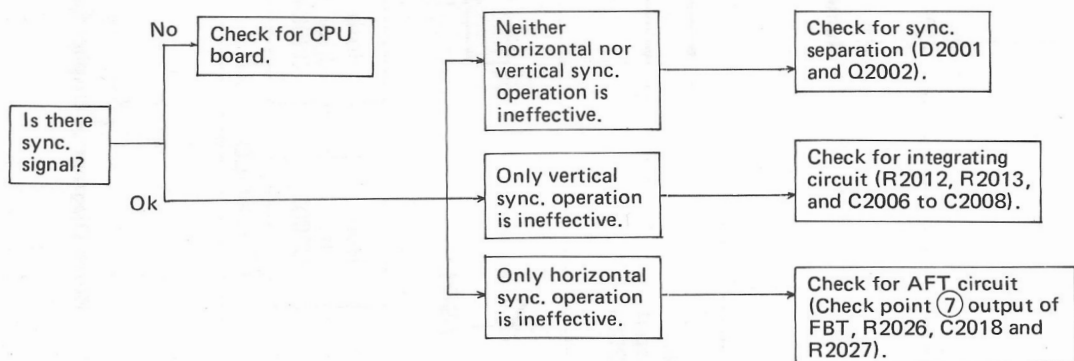


## ■ Trouble Shooting Chart

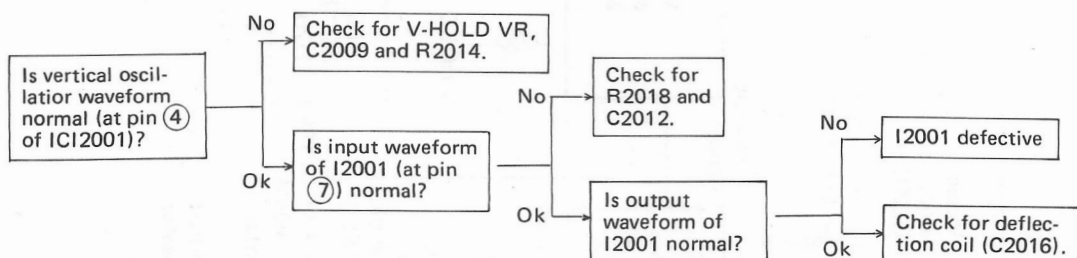
### Problem 1: No picture appears.



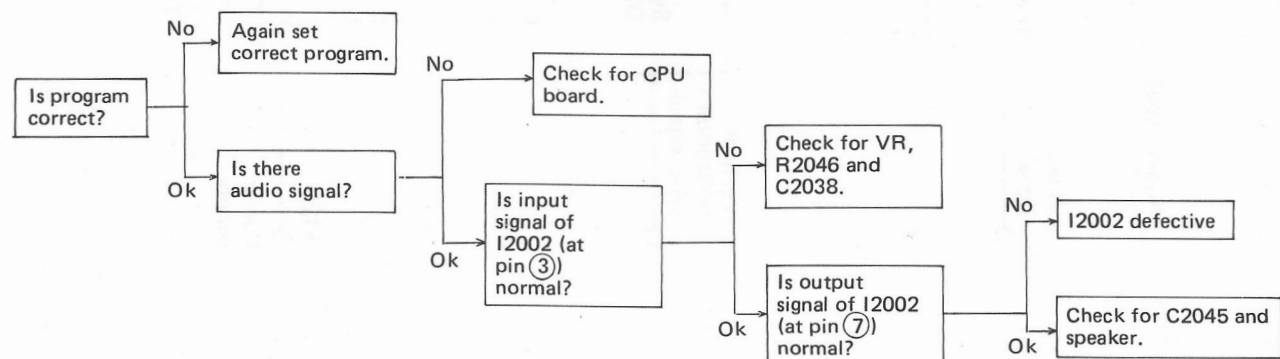
### Problem 2: Sync operation remains ineffective.



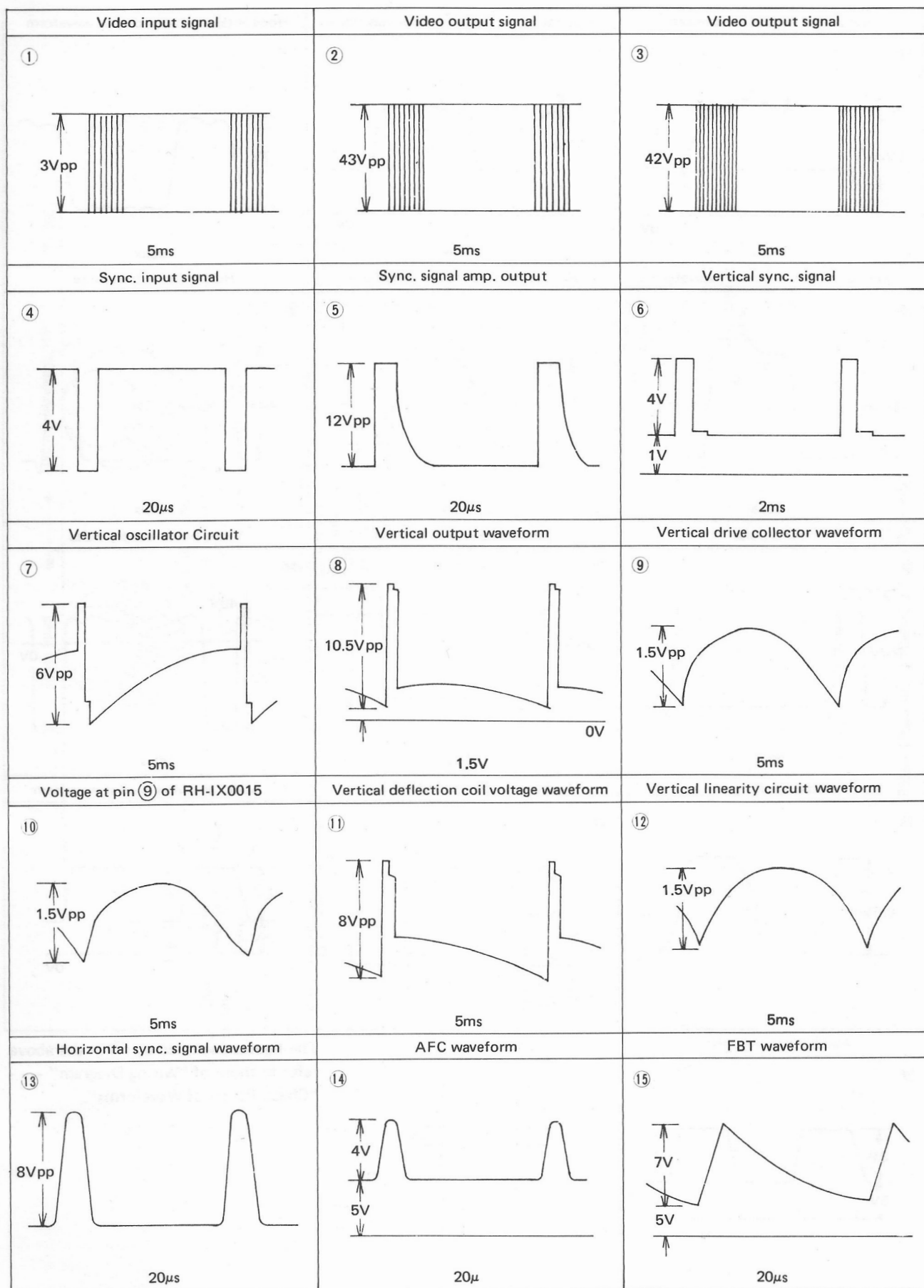
### Problem 3: Raster is too narrow.

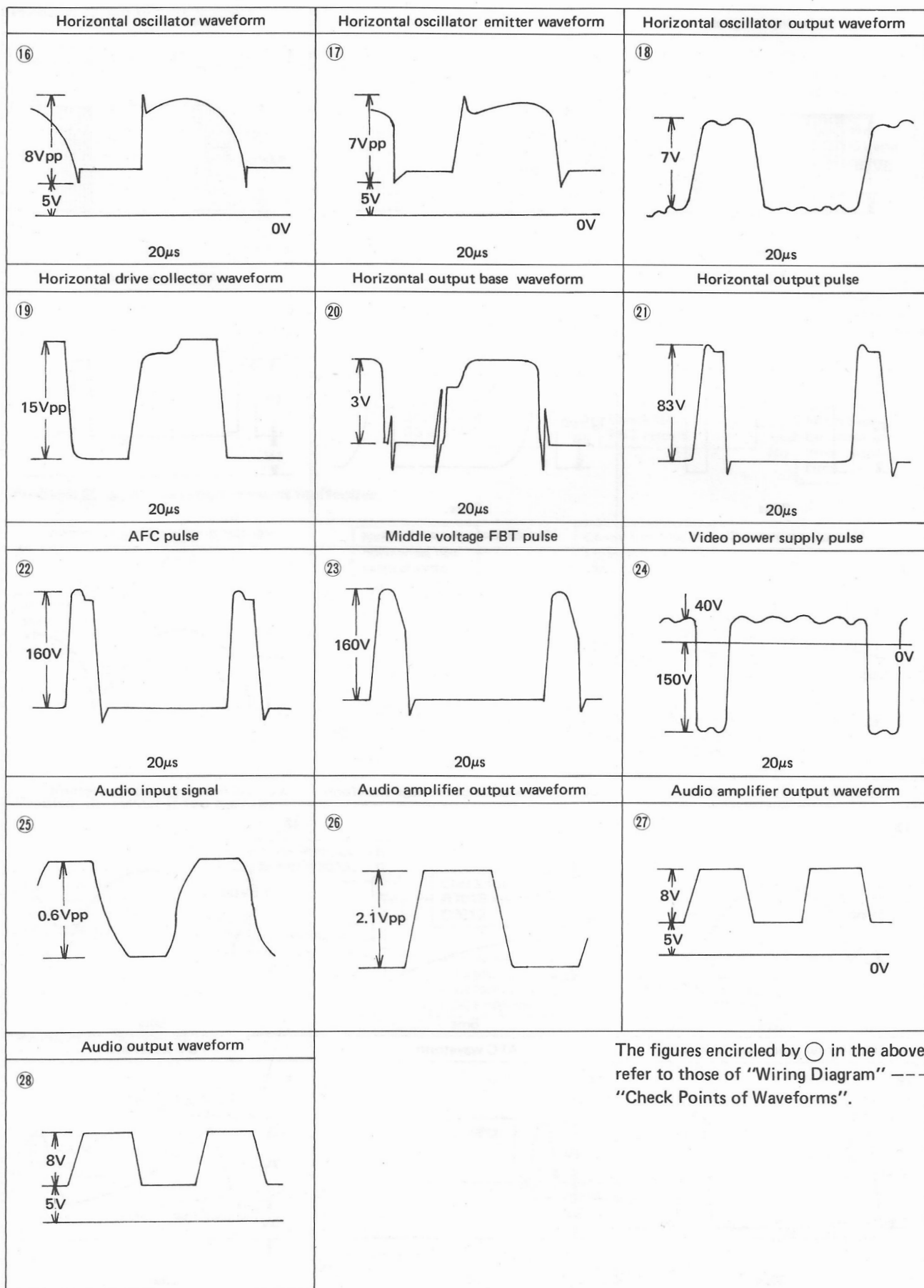


### Problem 4: No sound comes out.

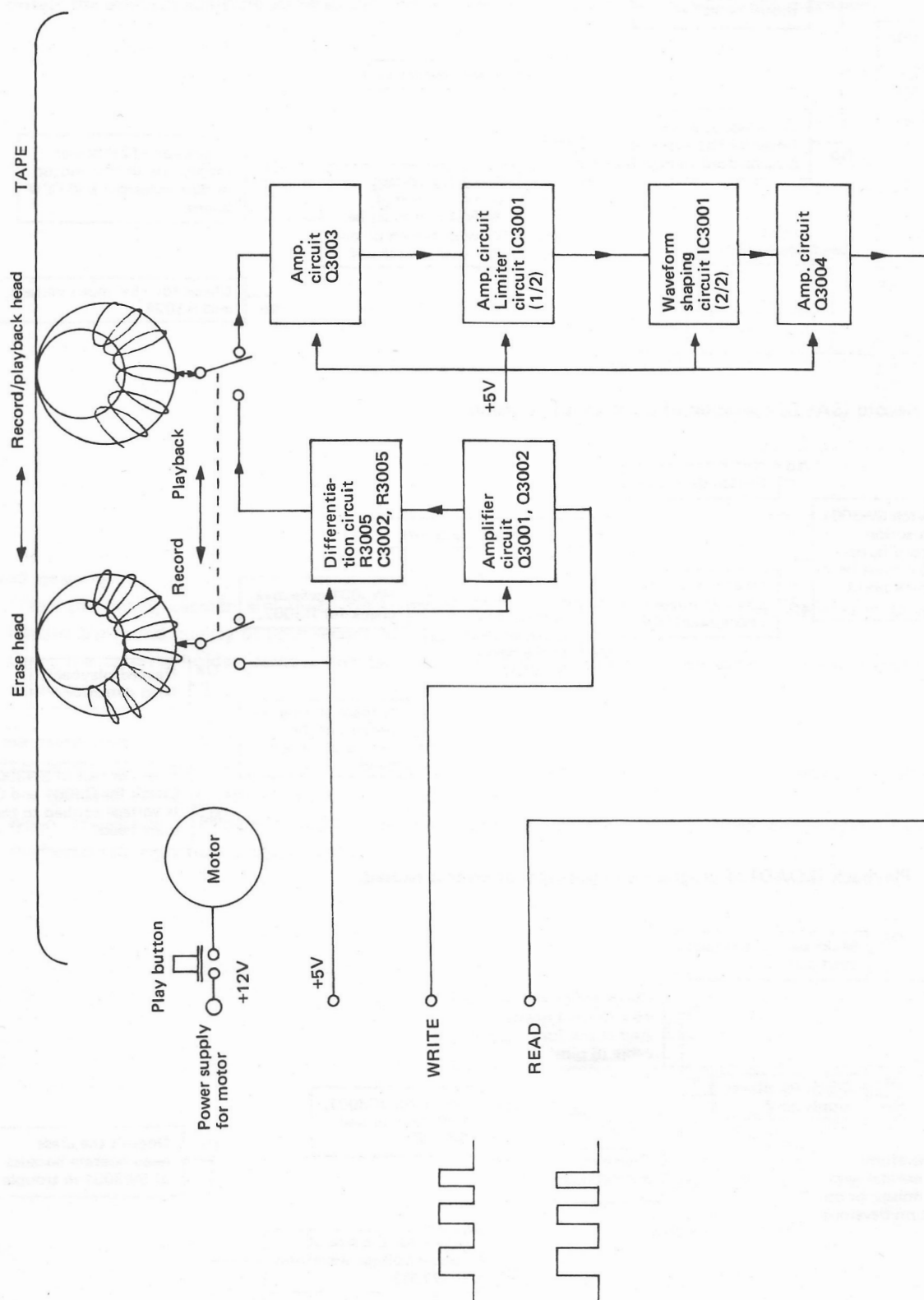


# ■ Waveforms of Display Section





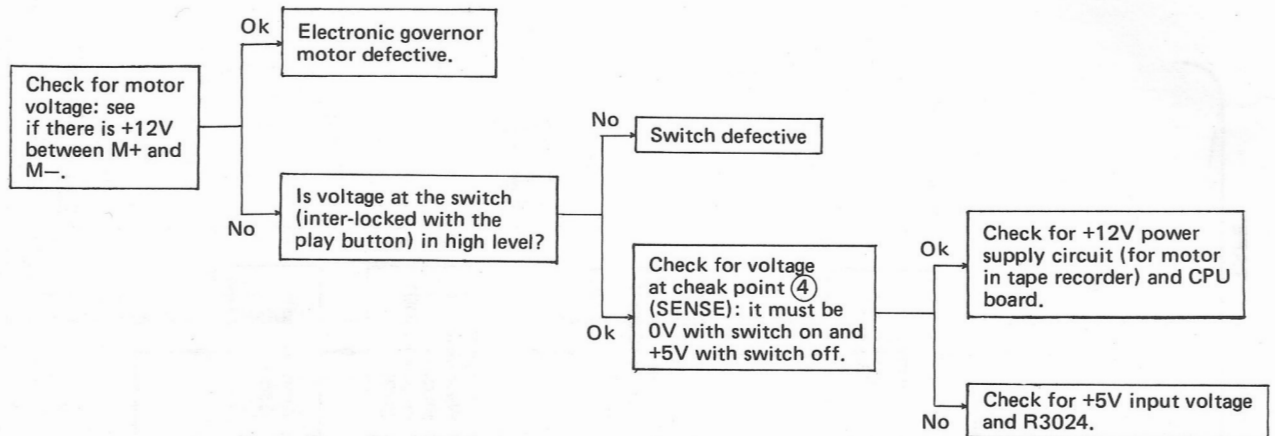
# CASSETTE TAPE RECORDER SECTION



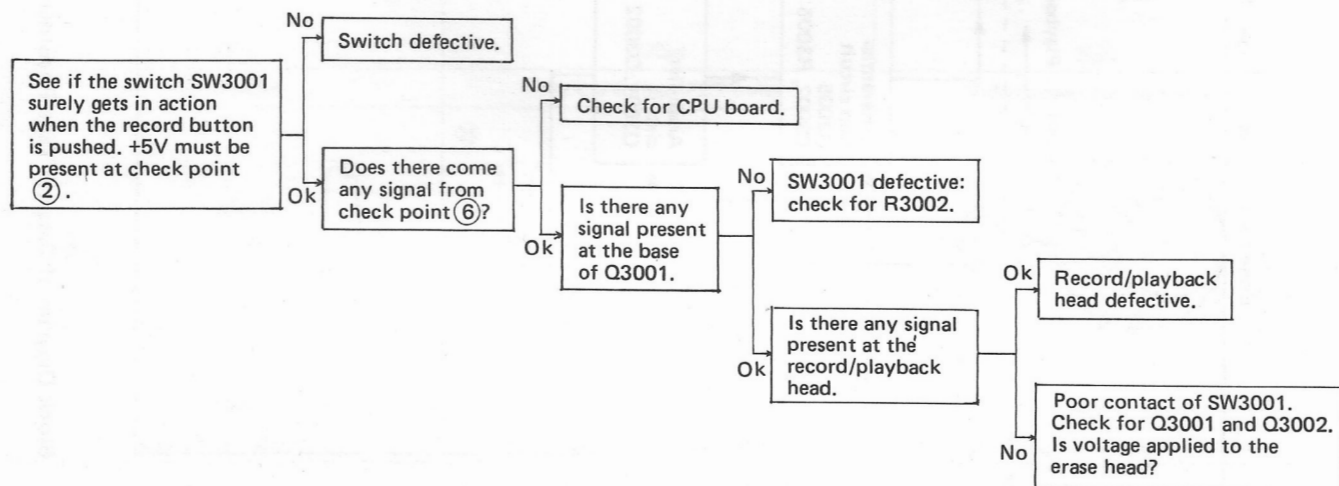
Block Diagram of Cassette Tape Recorder

## ■ Trouble Shooting Chart

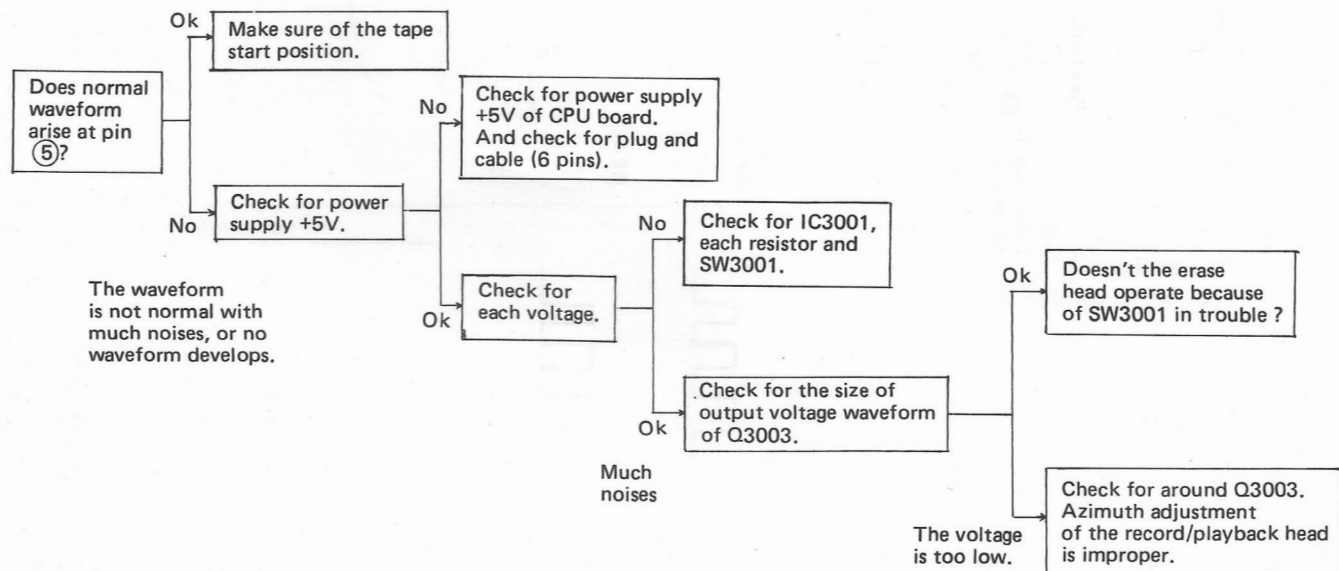
**Problem 1: Even if the play button is pushed, neither motor rotates nor tape moves.**



**Problem 2: Record (SAVE) operation of program is impossible.**



**Problem 3: Playback (LOAD) of program is impossible, or error is caused.**

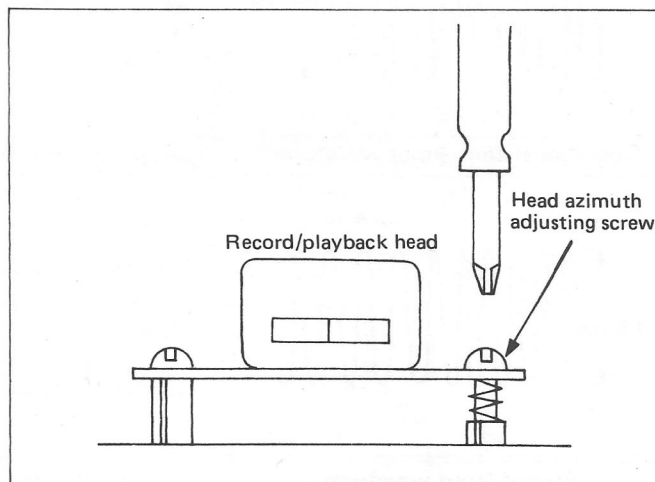




## ■ Azimuth Adjustment and Head Cleaning

### \* Azimuth adjustment of record/playback head

1. Connect a synchroscope to the collector of Q3003.
2. Load a test tape (TEAC, 3kHz-signal recorded) and play it back.
3. Rotate the azimuth adjusting screw so that the waveform on a synchroscope will be the maximum.



### Head cleaning

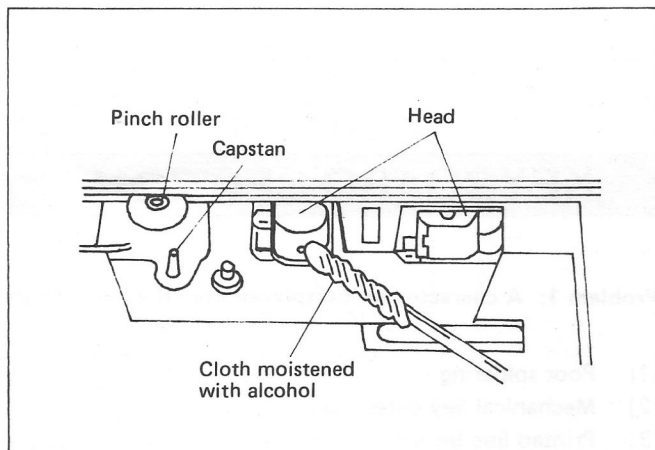
Clean the heads, capstan and pinch roller often, to remove dust and tape residue. Foreign material on them impairs the sound quality of both recording and playback.

Open the cassette holder, remove the tape, push the play button and clean them with a soft cloth moistened in alcohol.

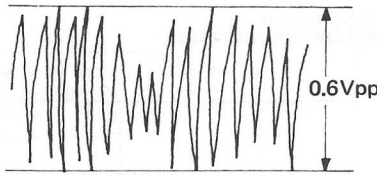
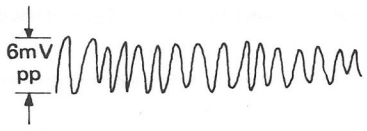
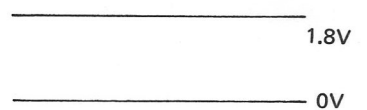
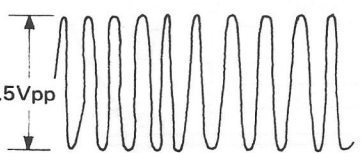
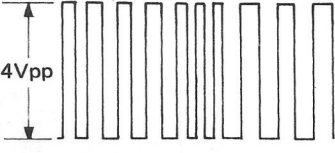
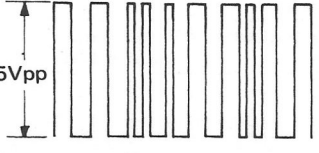
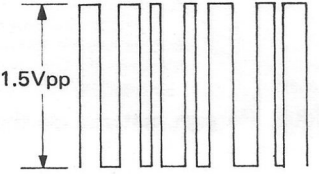
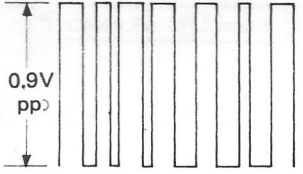
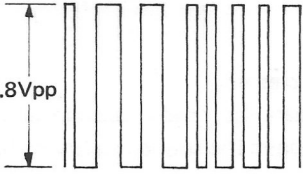
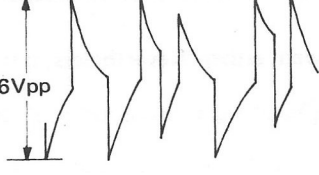
### Erase protection

To protect a cassette tape from being accidentally erased it was designed with two removable tabs. When the tabs are removed, it is impossible to push the record button.

When no cassette is inside the machine, no pushing of the record button is allowed, either. Nevertheless, pushing the button strongly may cause a trouble.



### Waveforms of Cassette Tape Recorder

1st stage amp. output waveform	Operational amp. input waveform	Operational amp. input waveform
① 	② 	③ 
Operational amp. input waveform	Operational amp. output waveform	Output waveform
④ 	⑤ 	⑥ 
Record input waveform	Record amp. waveform	Record amp. waveform
⑦ 	⑧ 	⑨ 
Head input waveform		
⑩ 		

The figures encircled by ① correspond to those of "Wiring Diagram" — "Check Points of Waveforms".

## KEYBOARD SECTION

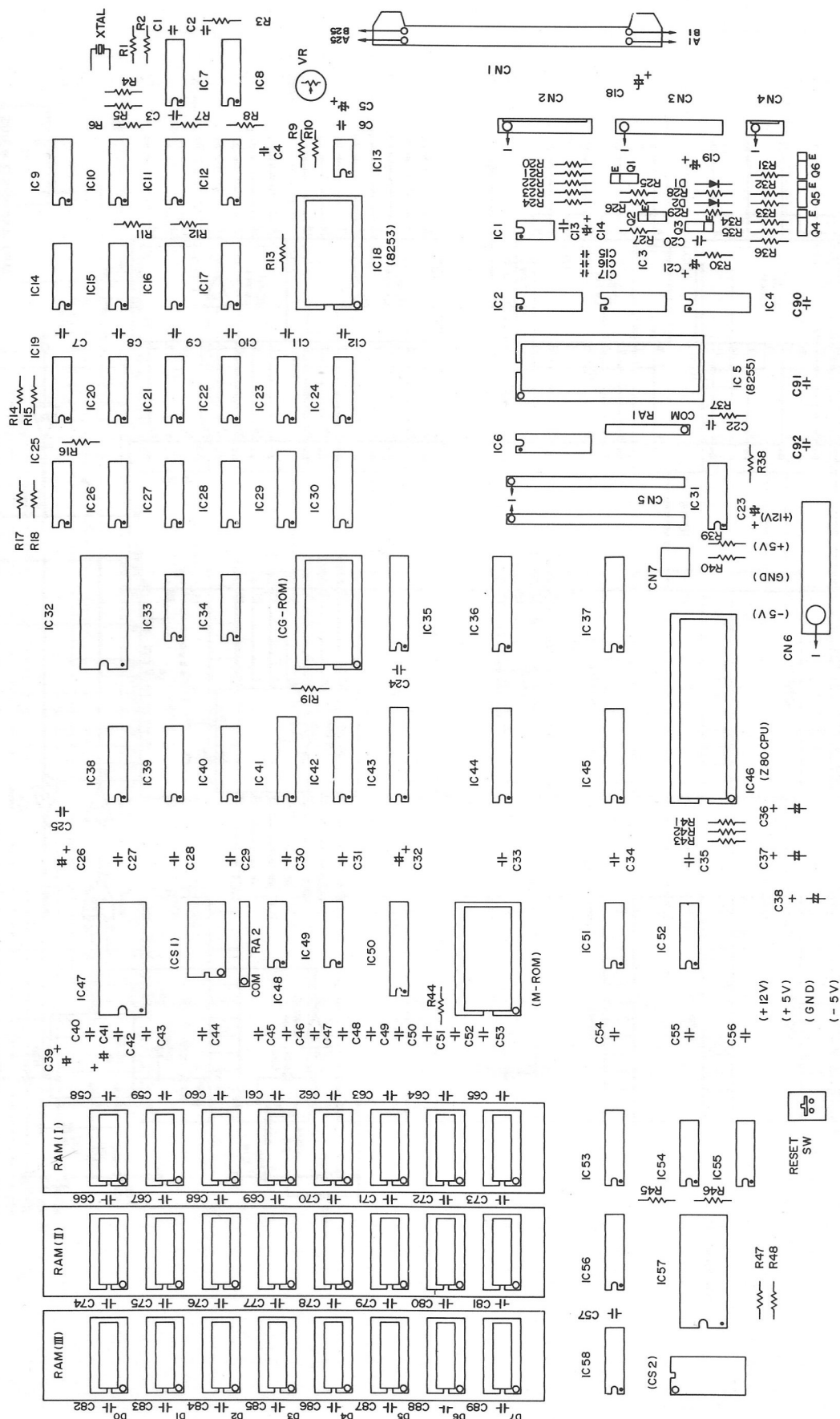
**Problem 1:** A character isn't displayed even if a key is pushed.

- (1) Poor soldering
- (2) Mechanical key defective
- (3) Printed line broken

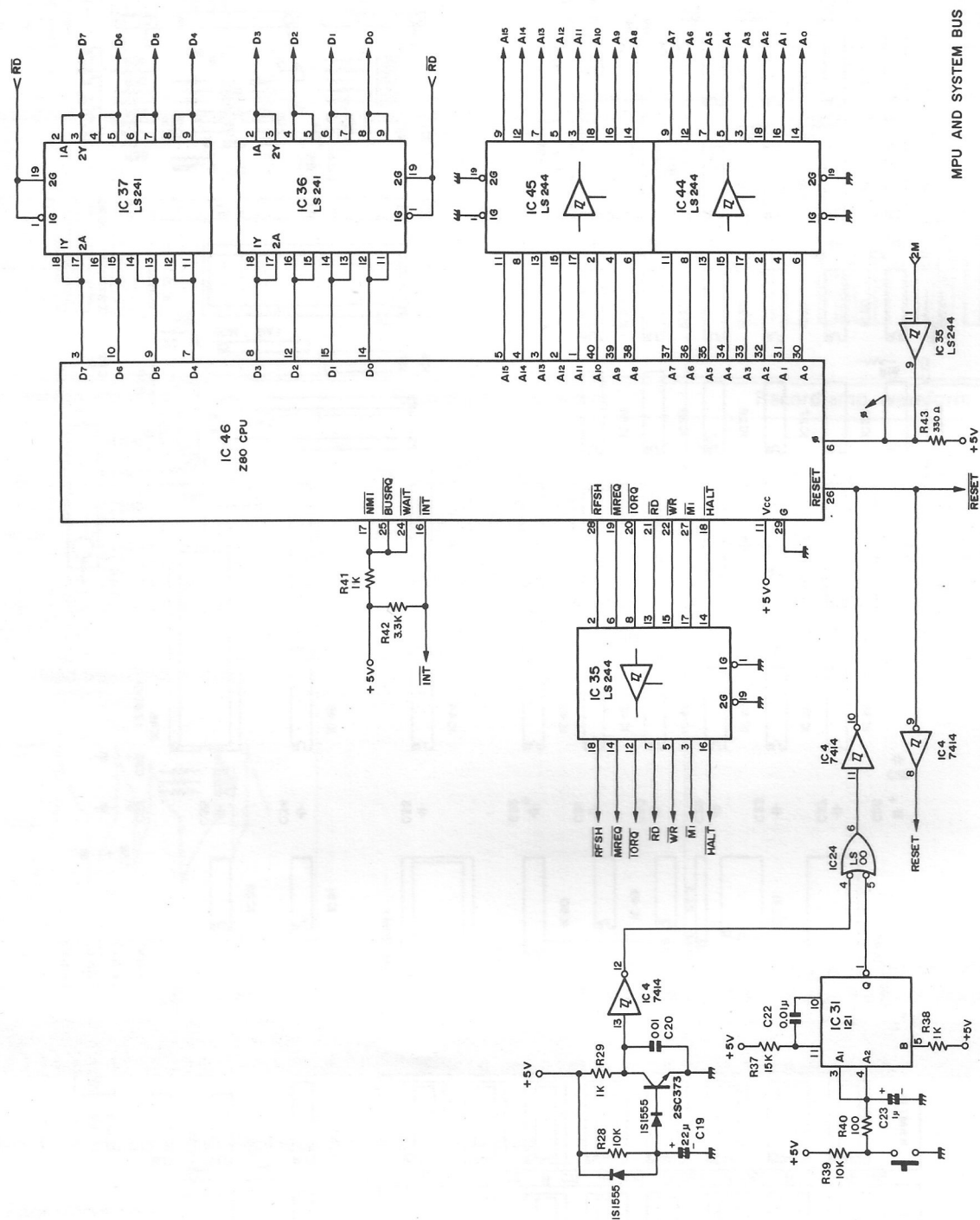
If there is nothing abnormal in the above checks, proceed with the checkings of "CPU Board Section".

# CIRCUIT DIAGRAM OF MZ-80K

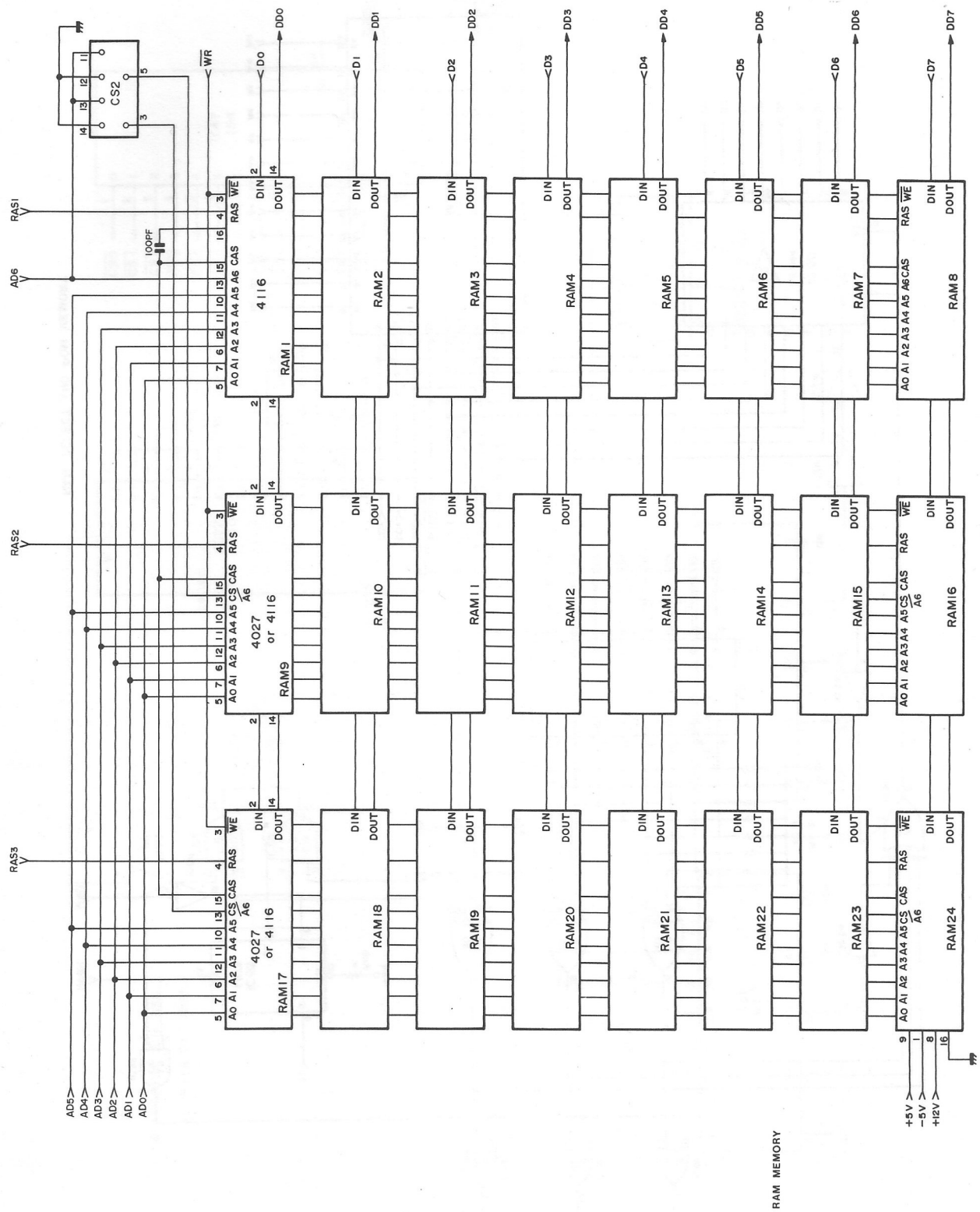
## ■ Symbols of CPU Section



# ■ Circuit Diagram (1) of CPU Board Section

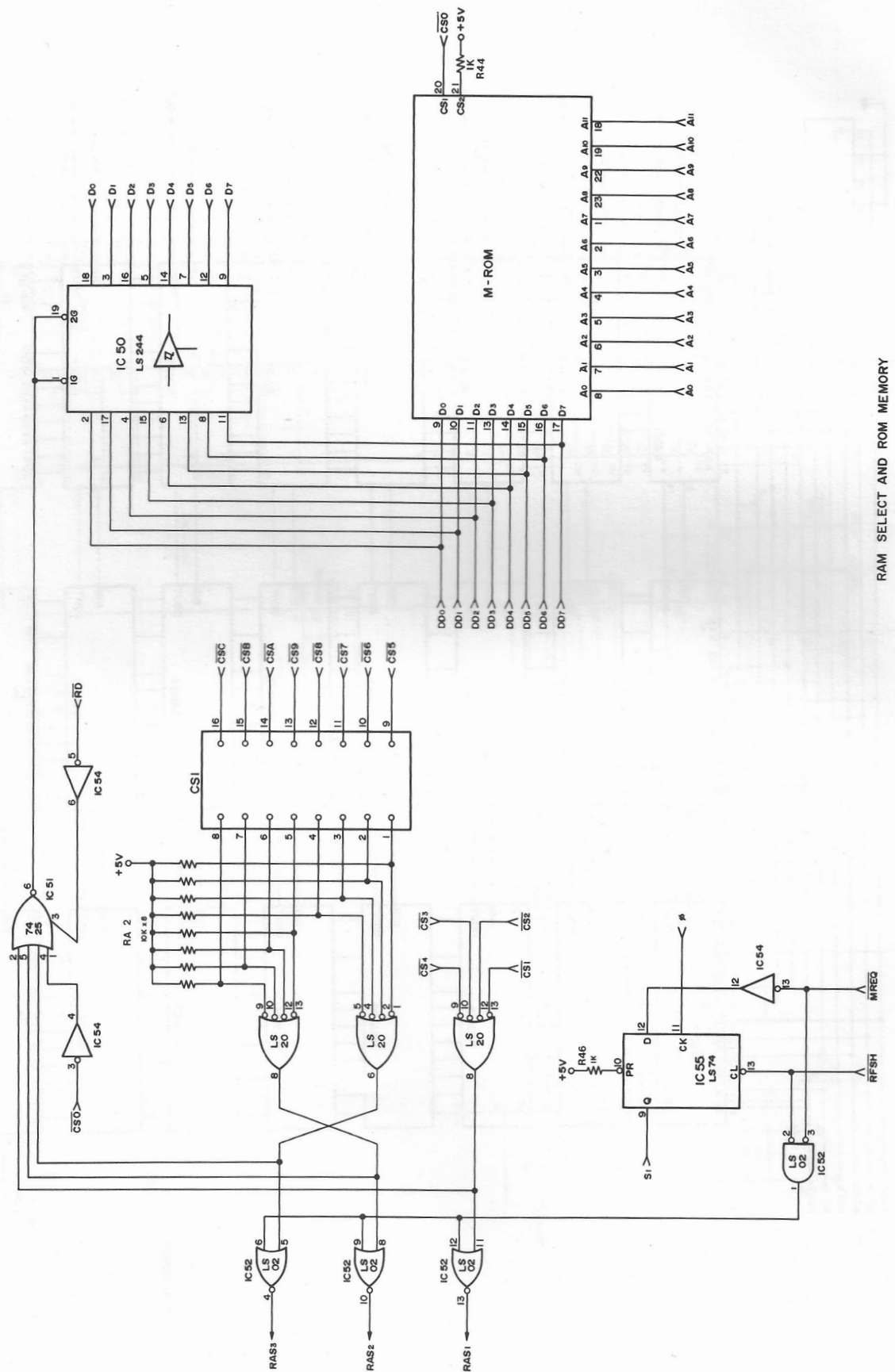


# ■ Circuit Diagram (2) of CPU Board Section



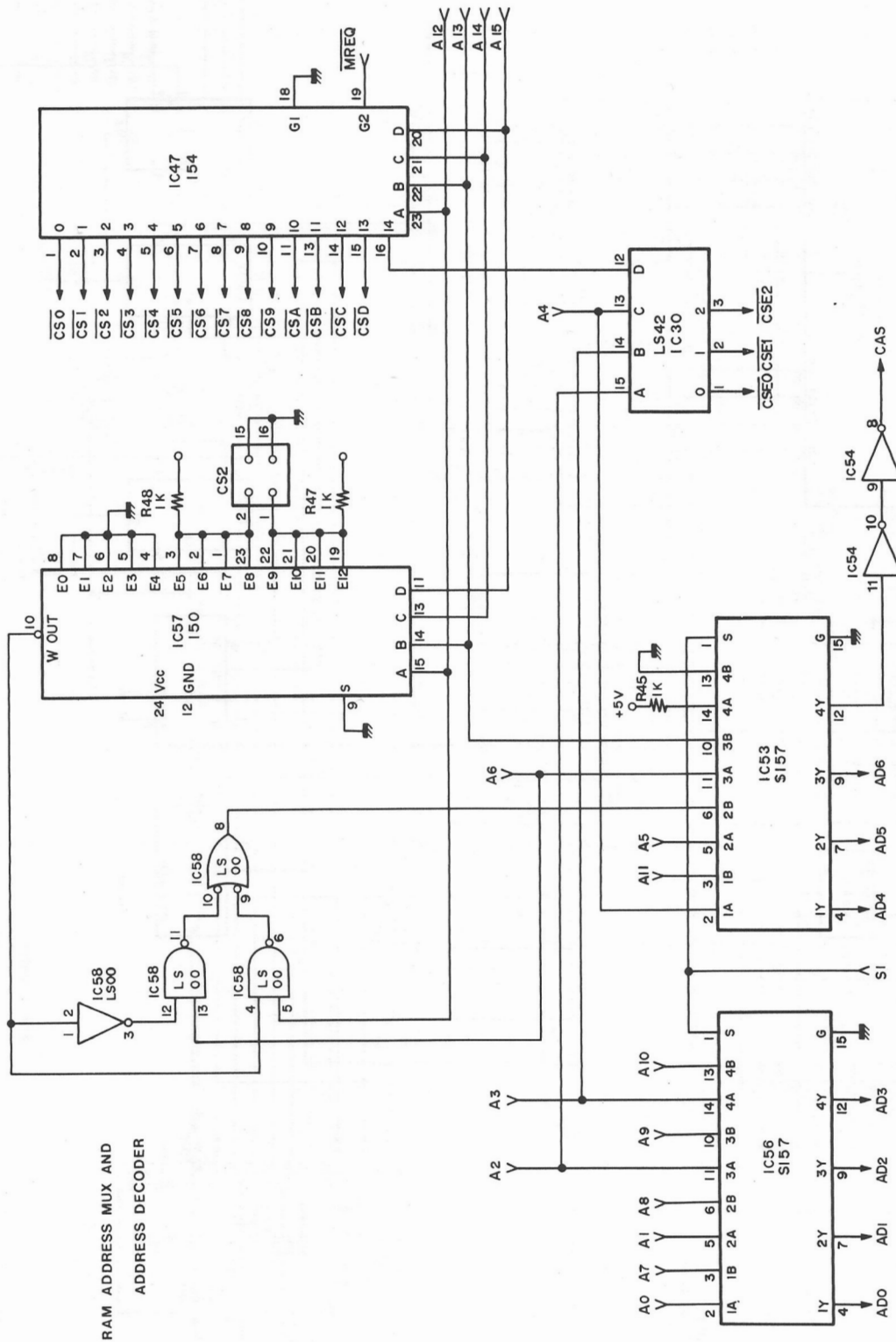


# ■ Circuit Diagram (3) of CPU Board Section

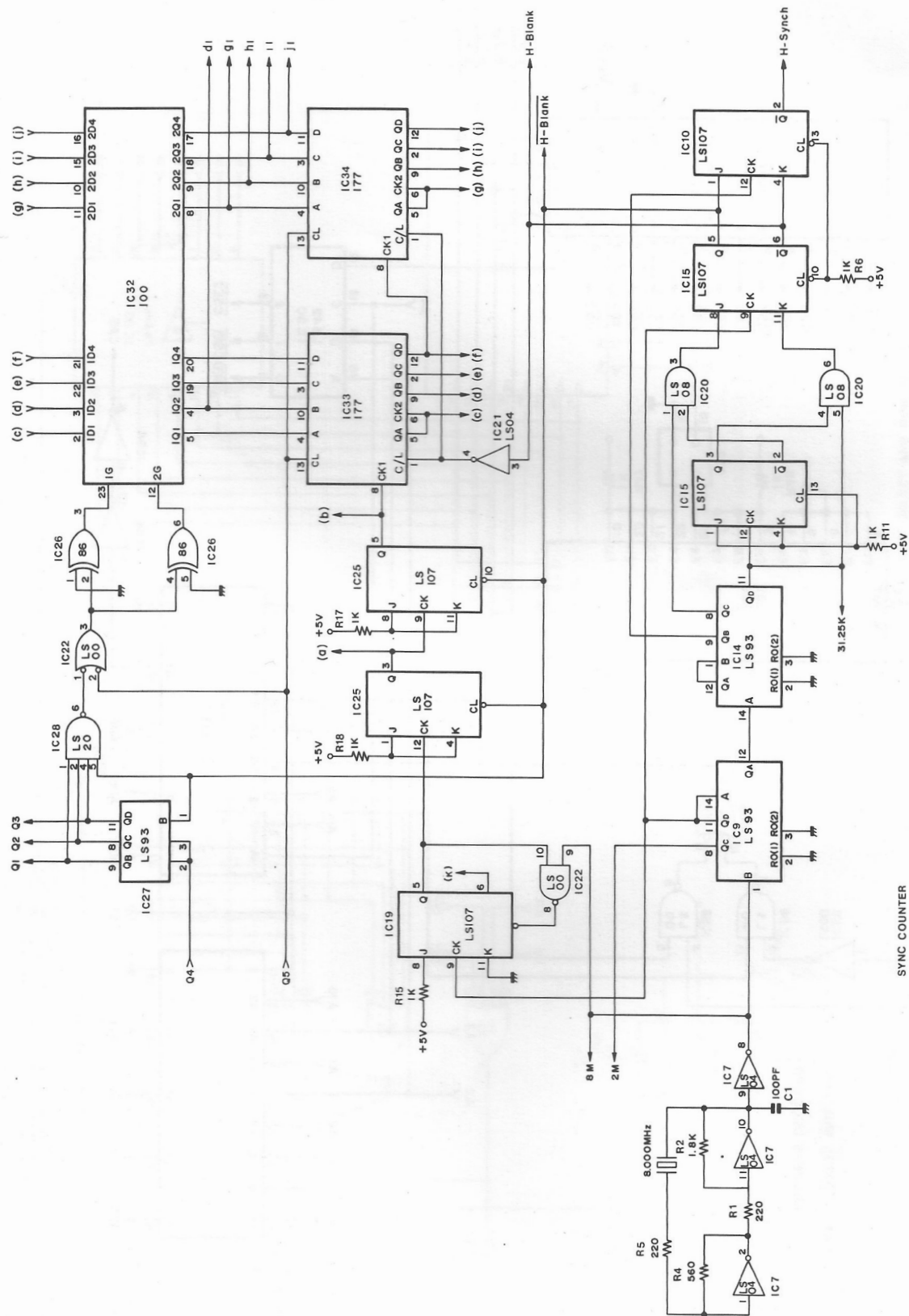


RAM SELECT AND ROM MEMORY

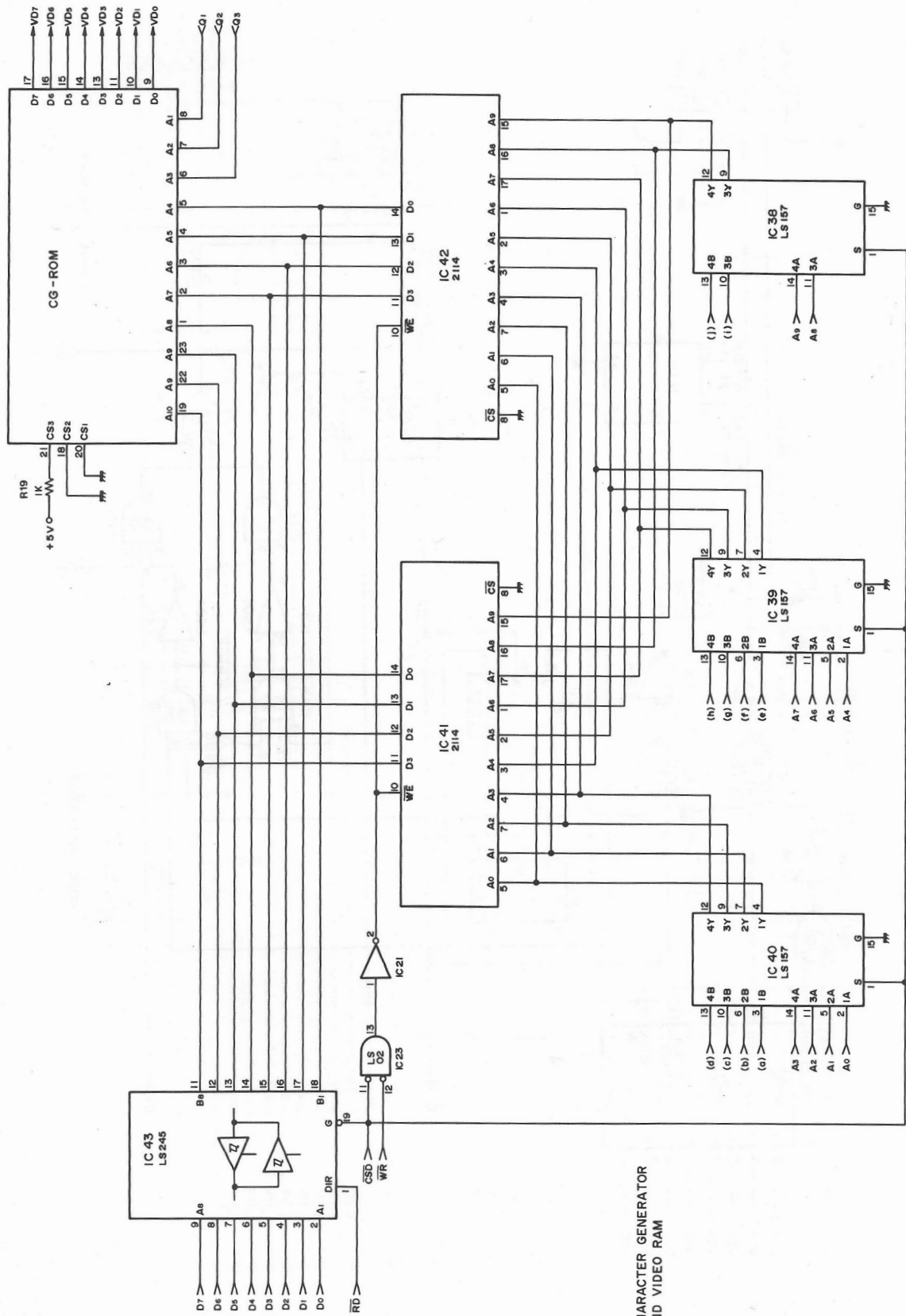
■ Circuit Diagram (4) of CPU Board Section



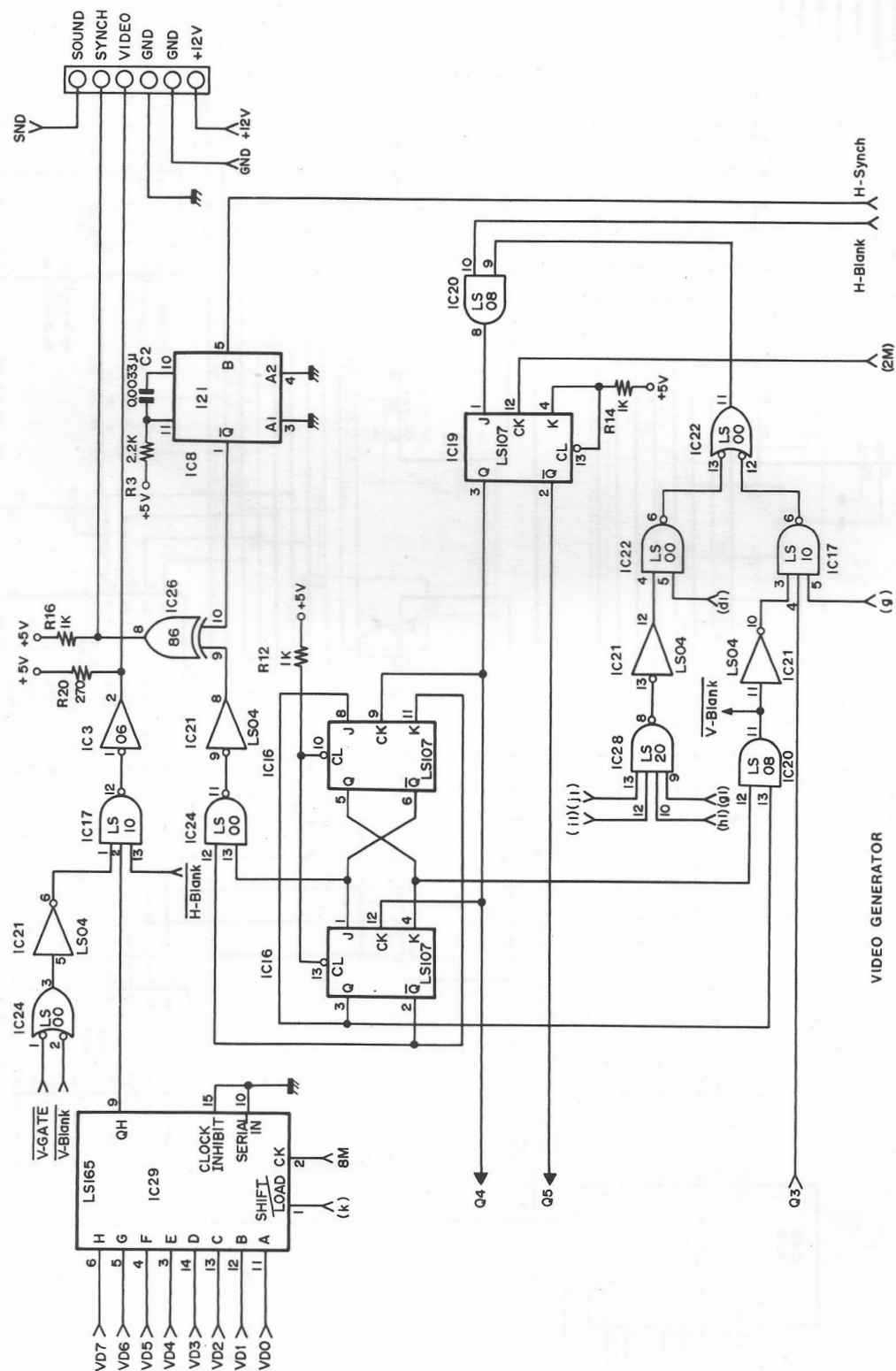
■ Circuit Diagram (5) of CPU Board Section



■ Circuit Diagram (6) of CPU Board Section

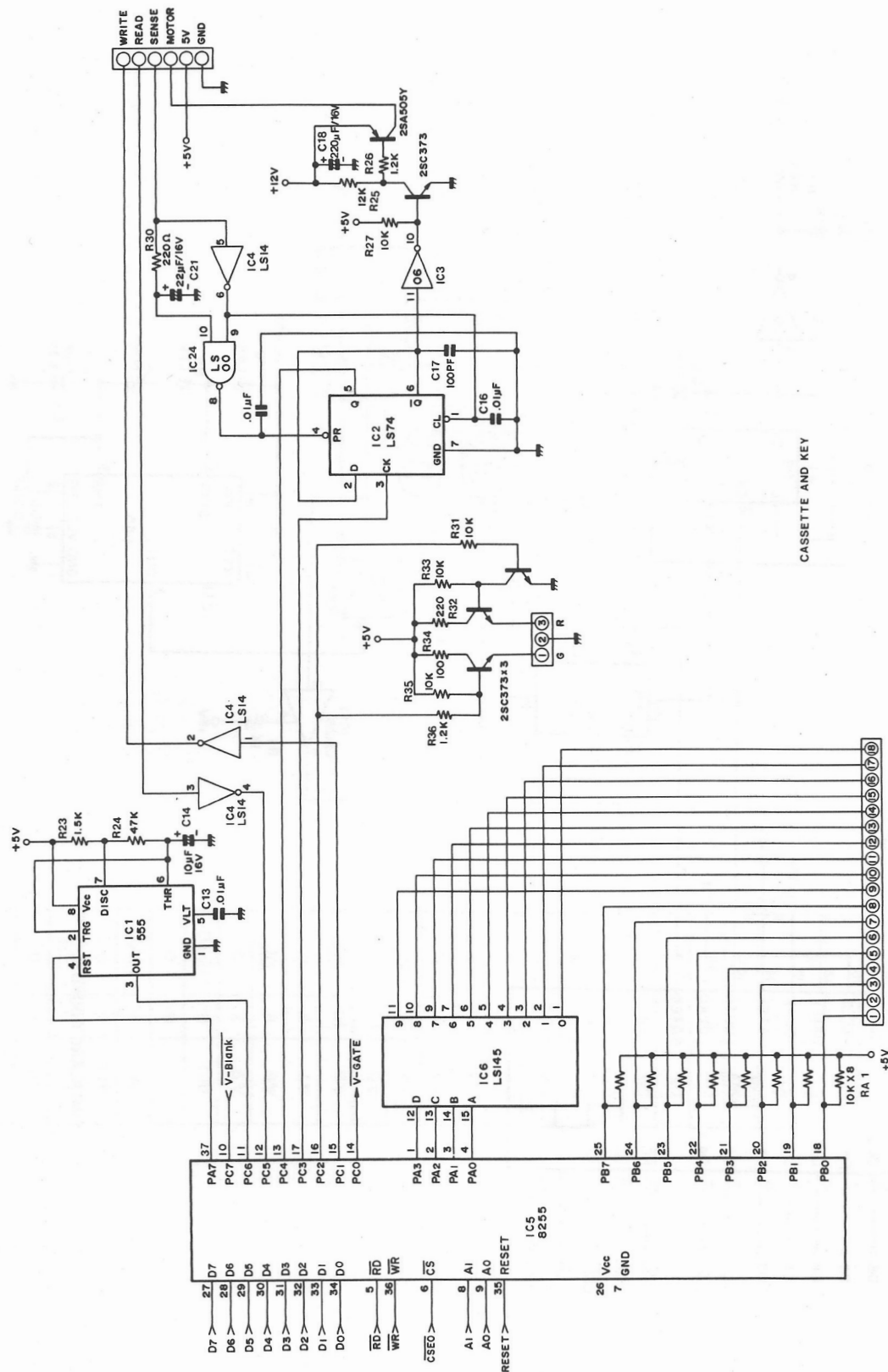


■ Circuit Diagram (7) of CPU Board Section



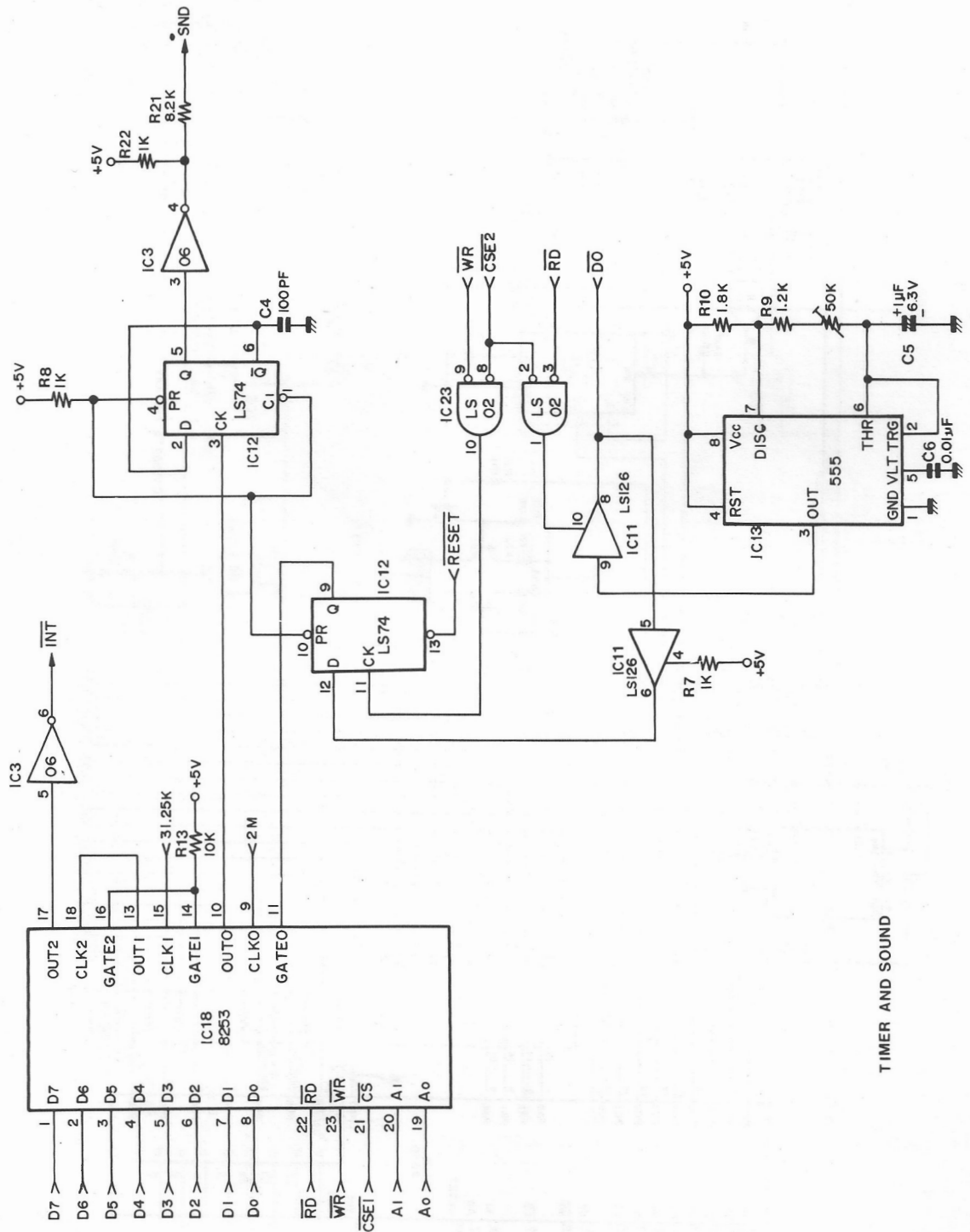


■ Circuit Diagram (8) of CPU Board Section



CASSETTE AND KEY

■ Circuit Diagram (9) of CPU Board Section



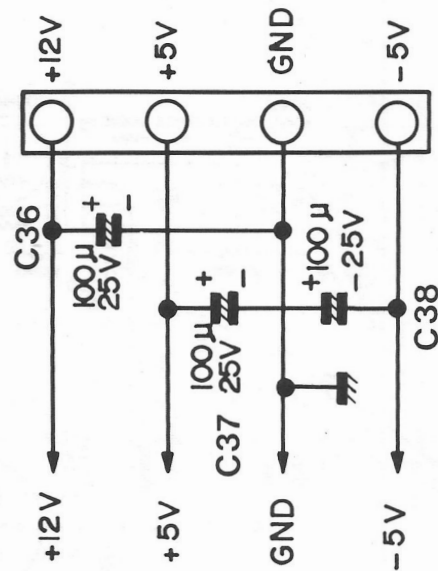
TIMER AND SOUND

■ Circuit Diagram (10) of CPU Board Section

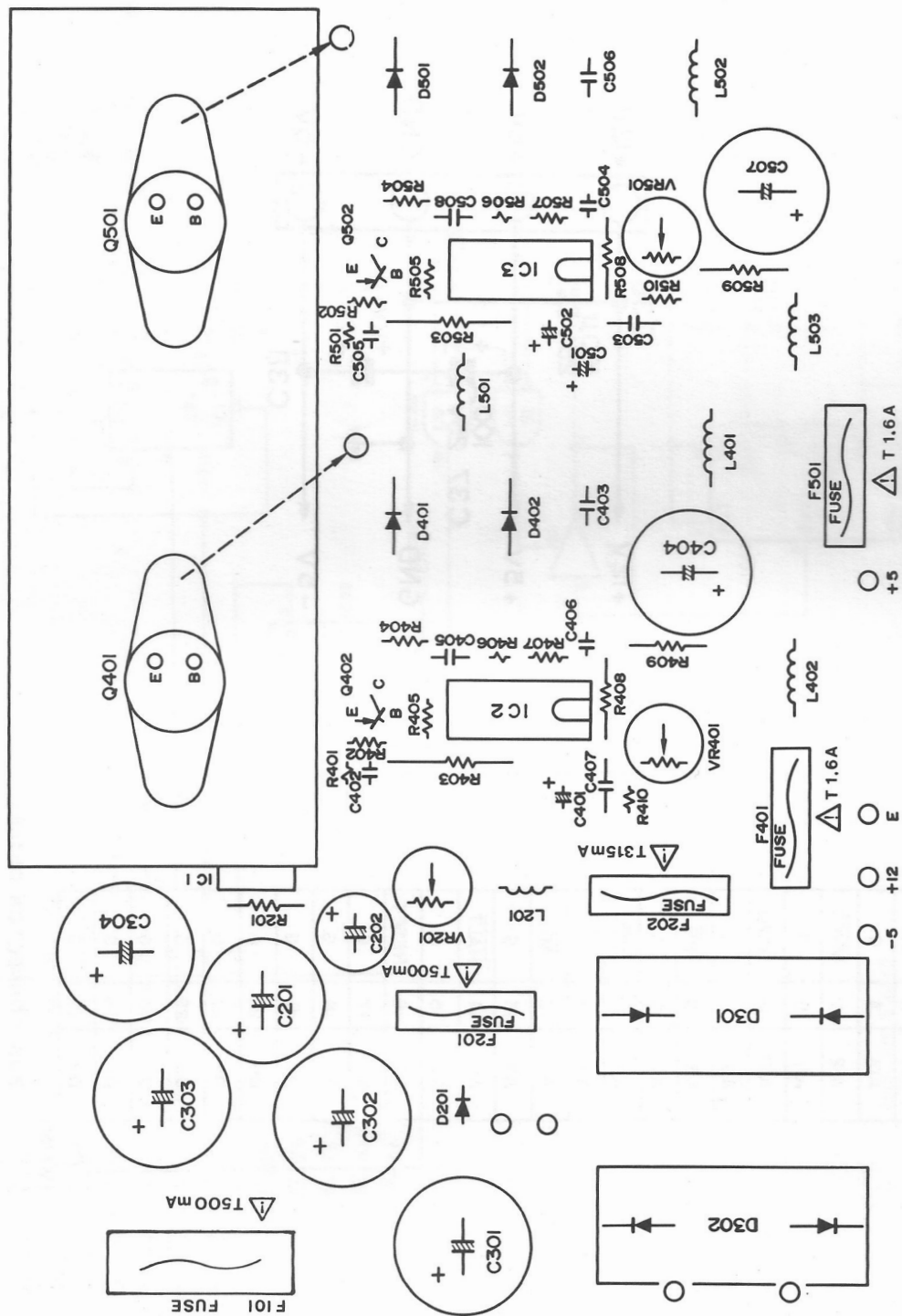
A		B
A15	1	G
A14	2	$\overline{\text{INT}}$
A13	3	G
A12	4	$\overline{\text{MREQ}}$
A11	5	G
A10	6	$\overline{\text{IORQ}}$
A9	7	G
A8	8	$\overline{\text{RD}}$
A7	9	G
A6	10	$\overline{\text{WR}}$
A5	11	G
A4	12	$\overline{\text{MI}}$
A3	13	G
A2	14	$\overline{\text{HALT}}$
A1	15	G
A0	16	RESET
G	17	G
D7	18	G
D6	19	G
D5	20	G
D4	21	G
D3	22	G
D2	23	G
D1	24	G
D0	25	G

△ (MARK)

BUS CONNECTOR DETAIL



# ■ Symbols of Power Supply Section

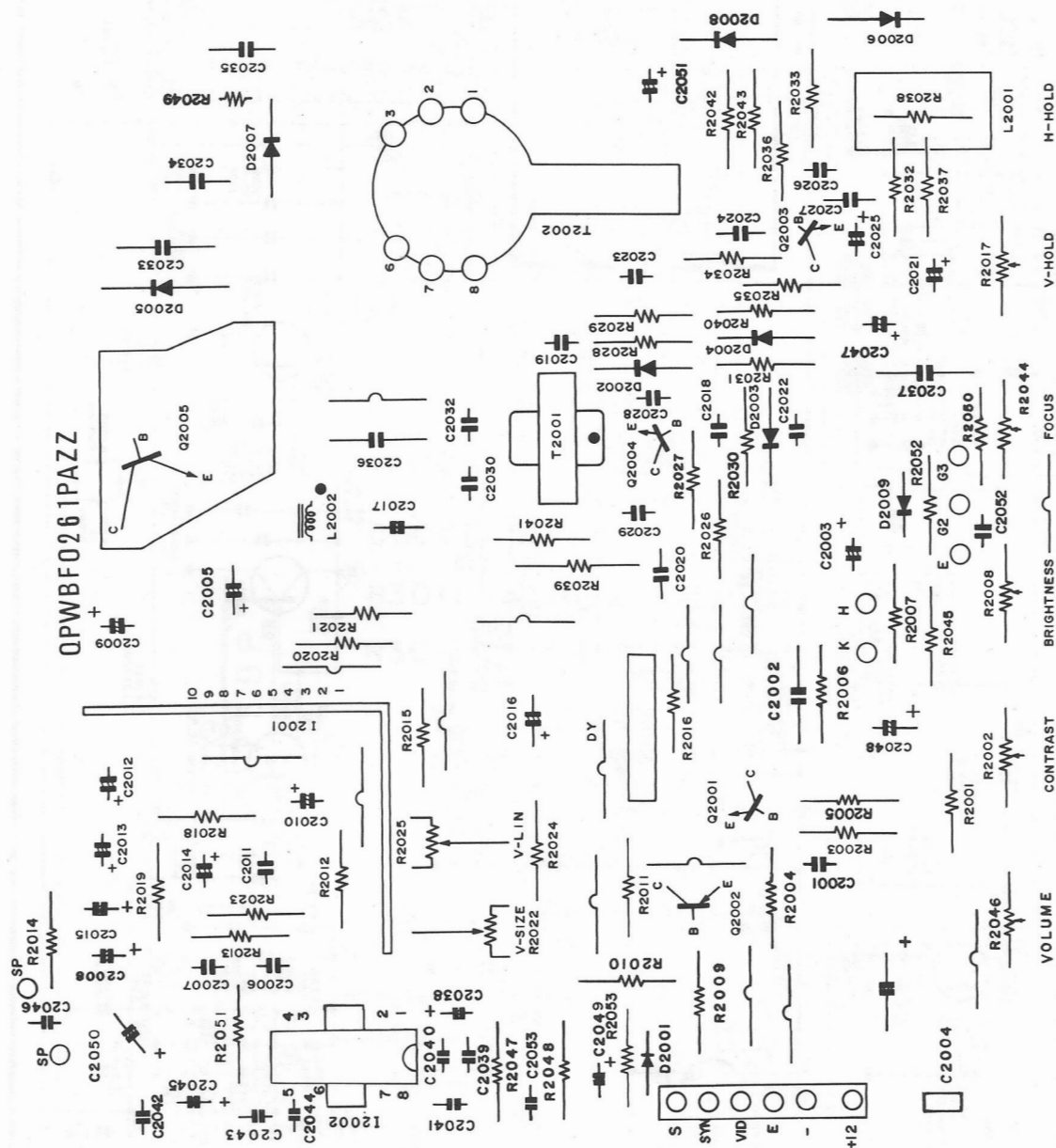




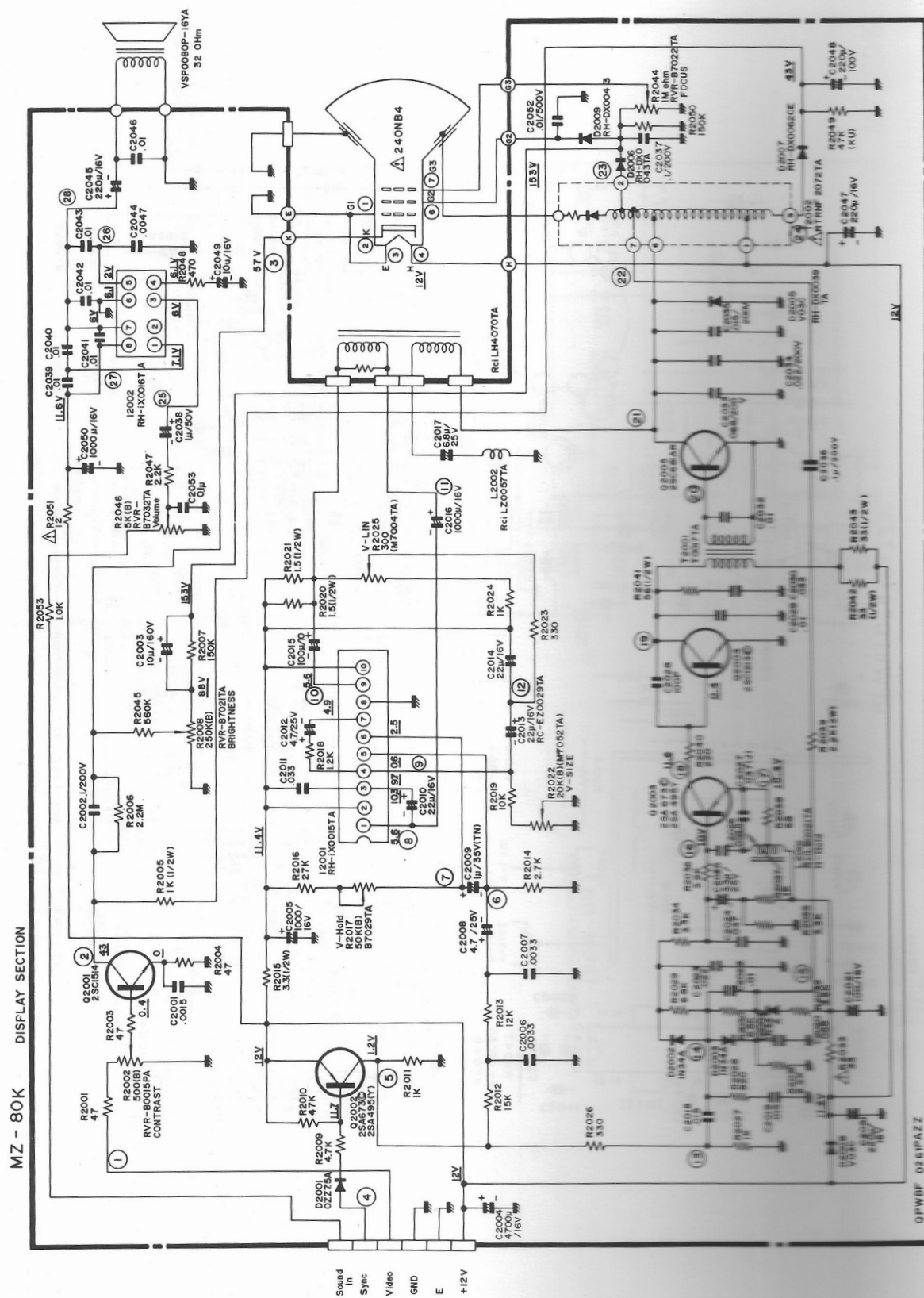




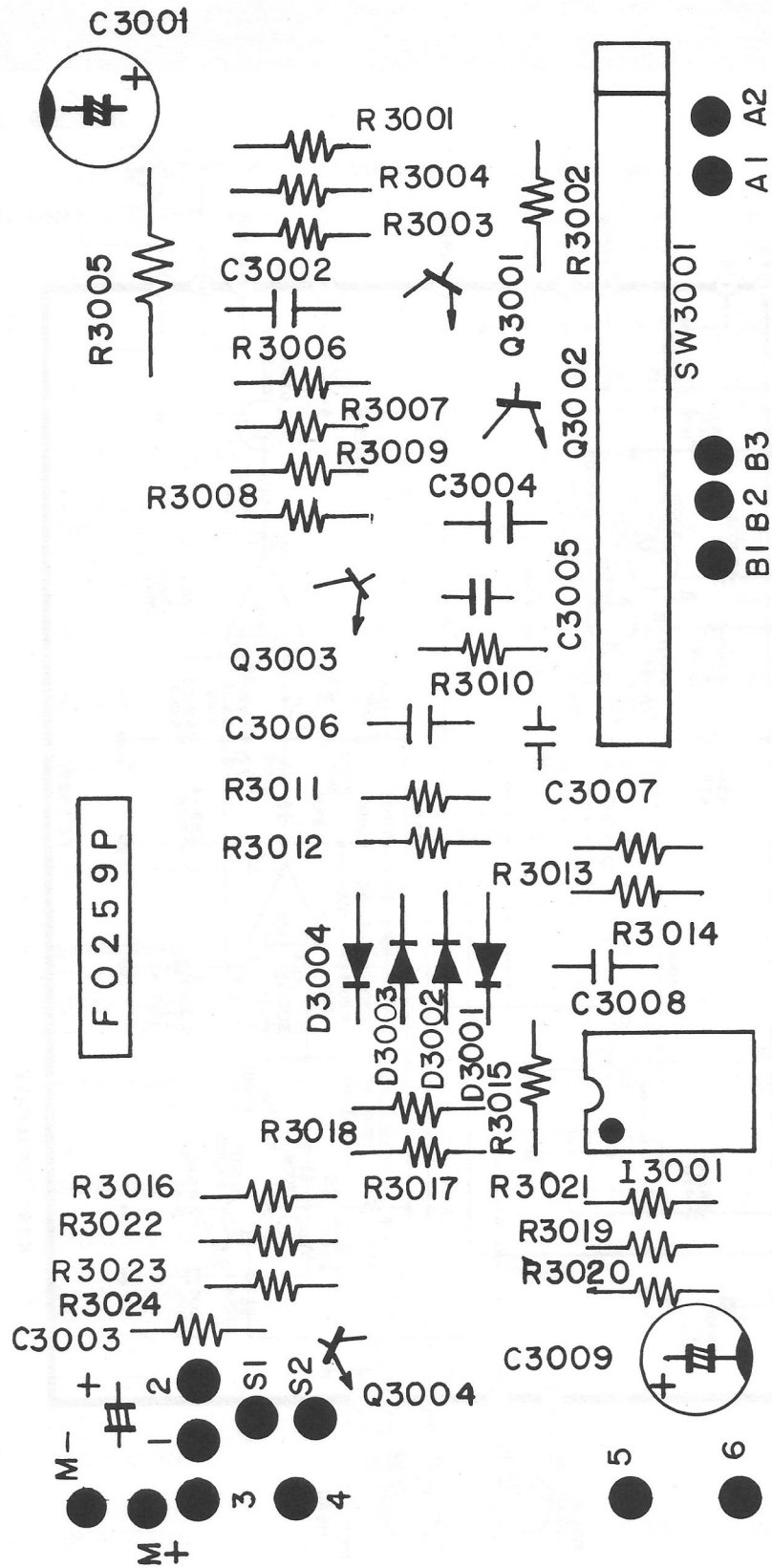
# ■ Symbols of Display Section



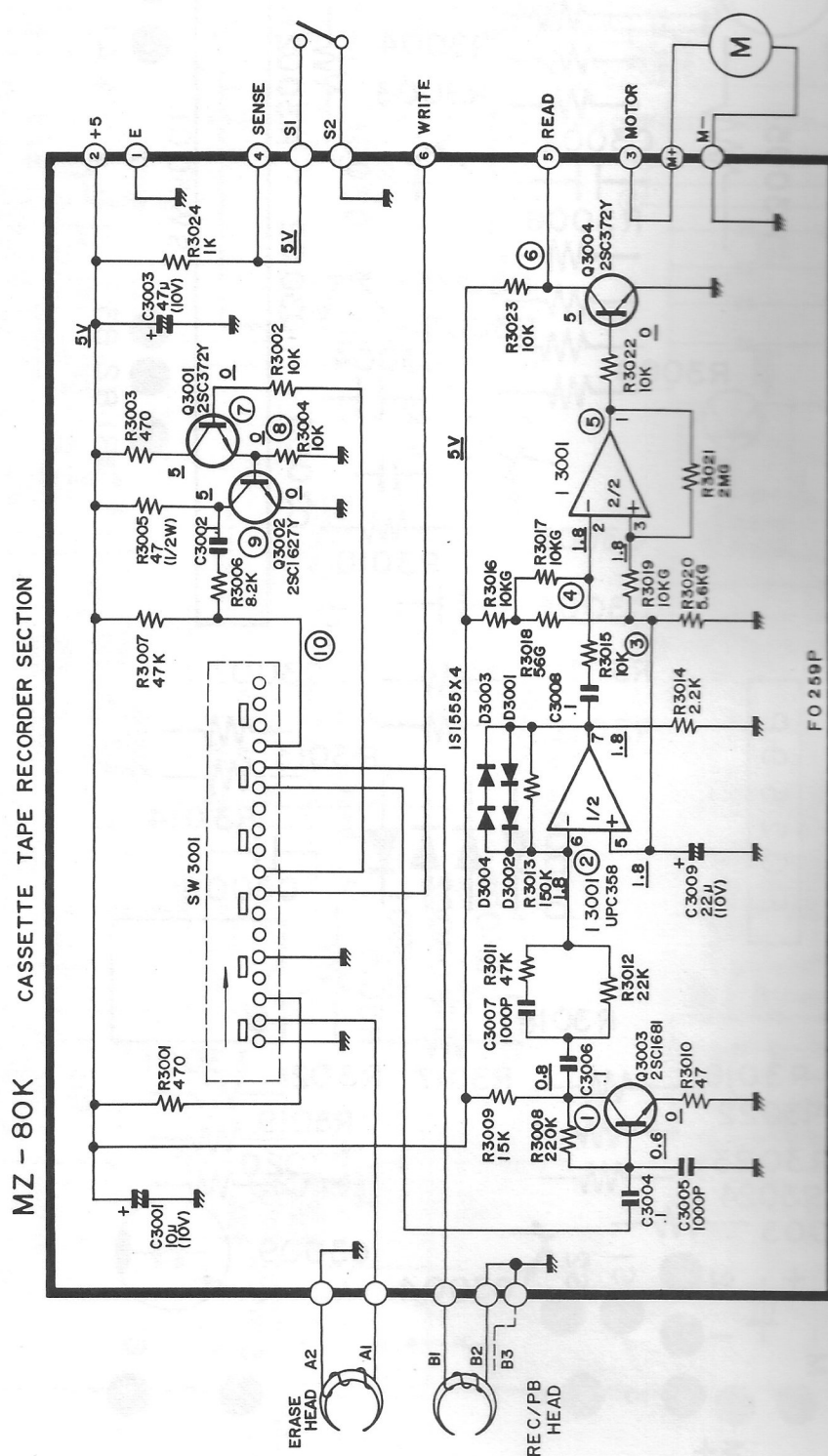
### ■ Wiring Diagram of Display Section



■ Symbols of Cassette Section



### ■ Wiring Diagram of Cassette Section



KTRC - 0004 PAZZ



# REPLACEMENT PARTS LIST

## "HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NAME
2. REF. NO.
3. PART NO.
4. DESCRIPTION

### MODEL MZ-80K

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
*** CPU BOARD UNIT SECTION ***							
	DCPU-0006PAZZ	Assembled CPU Board Unit					
<b>INTEGRATED CIRCUIT</b>							
IC1 } IC13 }	RH-IX0134PAZZ	NE555P		IC47	RH-IX0045PAZZ	SN74154N	AN
IC2 } IC12 }	RH-IX0079PAZZ	SN74LS74AN or HD74LS74	**	IC51	RH-IX0177PAZZ	SN7425N	AF
IC55 }				IC53 } IC56 }	RH-IX0148PAZZ	SN74S157Nor HD74S157	AQ
IC3	RH-IX0038PAZZ	SN7406N		IC57	RH-IX0147PAZZ	SN74150N	AM
IC4	RH-IX0131PAZZ	SN7414N	AG	CG-ROM	DROM0001PAZZ	HN462716 or MB8156C	BS
IC5	RH-IX0136PAZZ	$\mu$ PD8255C		M-ROM	RH-IX0171PAZZ	$\mu$ PD2332C	BL
IC6	RH-IX0126PAZZ	SN74LS145N	AG	RAM	RH-IX0145PAZZ	16KRAM, ITT4116 or MB8116	BE
IC7 }				RAM	RH-IX0121PAZZ	4KRAM, ITT4027 or MB8227	AV
IC21 }	RH-IX0074PAZZ	SN74LS04N or HD74LS04P	AG	<b>TRANSISTORS AND DIODES</b>			
IC54 }			AM	Q1	VS2SA505Y//1A	2SA505-Y	AF
IC8 }	RH-IX0040PAZZ	SN74121N	BA	Q2 } Q3 }			
IC31 }			AL	Q4	VS2SC373G//1E	2SC373	AC
IC9 }				Q5 } Q6 }			
IC14 }	RH-IX0125PAZZ	SN74LS93	AK	D1 } D2 }	VHD1S1555//1A	1S1555	AA
IC27 }				<b>RESISTORS</b>			
IC10 }				R1 }			
IC15 }				R5 }			
IC16 }	RH-IX0127PAZZ	SN74LS107AN or HD741S107	AG	R30 }	VRD-ST2EF221J	220 ohm	AA
IC19 }				R32 }			
IC25 }				R2 }	VRD-ST2EE182J	1.8K ohm	AA
IC11	RH-IX0142PAZZ	SN74S126AN	AH	R10 }	VRD-ST2EF222J	2.2K ohm	AA
IC17	RH-IX0076PAZZ	SN74LS10N or HD74LS10P	AE	R4	VRD-ST2EF561J	560 ohm	AA
IC18	RH-IX0146PAZZ	$\mu$ PD8253C	BC	R6 }			
IC20	RH-IX0075PAZZ	SN74LS08N or HD74LS08P	AE	R7 }			
IC22 }				R8 }			
IC24 }	RH-IX0070PAZZ	SN74LS00N or HD74LS00	AE	R11 }			
IC58 }				R12 }			
IC23 }				R14 }			
IC52 }	RH-IX0071PAZZ	SN74LS02N or HD74LS02	AE	?			
IC26	RH-IX0132PAZZ	SN7486N	AF	R19 }	VRD-ST2EF102J	1K ohm	AA
IC28 }				R22 }			
IC48 }	RH-IX0128PAZZ	SN74LS20N or HD74LS20	AE	R29 }			
IC49 }				R38 }			
IC29	RH-IX0129PAZZ	SN74LS165N	AQ	R41 }			
IC30	RH-IX0104PAZZ	SN74LS42N or HD74LS42	AH	R44 }			
IC32	RH-IX0130PAZZ	SN74177N	AQ	?			
IC33 }				R48 }			
IC34 }	RH-IX0133PAZZ	SN74177N	AL	R9 }			
IC35 }				R26 }	VRD-ST2EF122J	1.2K ohm	AA
IC44 }				R36 }			
IC45 }	RH-IX0123PAZZ	SN74LS244N	AS	R13 }			
IC50 }				R27 }			
IC36 }				R28 }			
IC37 }	RH-IX0176PAZZ	SN74LS241N	AS	R31 }	VRD-ST2EF103J	10K ohm	AA
IC38 }				R33 }			
IC39 }	RH-IX0083PAZZ	SN74LS157N or HD74LS157	AH	R35 }			
IC40 }				R39 }			
IC41 }							
IC42 }	RH-IX0122PAZZ	MB8114NC or HM472114P-3	AV				
IC43	RH-IX0124PAZZ	SN74LS245N	AR				
IC46	RH-IX0090PAZZ	Z80CPU	BF				



# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE		
R20	VRD-ST2EF271J	270 ohm	AA	C36	VCEAAU1EW107Y	100MFD, 25V, Aluminum	AB		
R21	VRD-ST2EF822J	8.2K ohm	AA	C37					
R23	VRD-ST2EF152J	1.5K ohm	AA	C38					
R24	VRD-ST2EF473J	47K ohm	AA	C39	VCSACU1AE336K	33MFD, 10V, Tantalum	AD		
R25	VRD-ST2EF123J	12K ohm	AA	C41	VCSACU1VE106M	10MFD, 35V, Tantalum	AE		
R34	VRD-ST2EF101J	100 ohm	AA	C59	VCTYPU1ED104Z	0.1MFD, 25V, Ceramic	AB		
R40			AA	C61					
R37	VRD-ST2EF153J	15K ohm	AA	C63					
R42	VRD-ST2EF332J	3.3K ohm	AA	C65					
R43	VRD-ST2EF331J	330 ohm	AA	C66					
VR	RVR-M0019PAZZ	Variable Resistor 68K ohm	AC	C68					
RA1	RR-KZ0031PAZZ	Resistor Array 10K ohm x 8	AD	C70					
RA2			AD	C72					
				C75					
				C77					
				C79					
				C81					
				AA				C82	
				AA				C84	
								C86	
								C88	
<b>CAPACITORS</b>				<b>MISCELLANEOUS</b>					
C1	VCCCPR1H3101J	100PF, Ceramic	AA	XTAL	RCRSA0009PAZZ	Crystal, 8.00MHz	AN		
C4				QSOCZ0012PAZZ	40-Pin socket	AH			
C17				QSOCZ0010PAZZ	24-Pin socket	AF			
C2	VCQYKU1HM332K	0.0033MFD, Film	AA		QSOCZ0009PAZZ	16-Pin socket	AE		
C3				CS1	QLUGP0001PAZZ	16-Pin Descreat platform	AC		
C7				CS2					
C12				CN1	QPLGZ0021PAZZ	50-Pin terminal (for Bus lines)	AW		
C24				CN2	QPLGZ0018PAZZ	6-Pin terminal (for TV)	AD		
C25				CN3	QPLGZ0006PAZZ	6-Pin terminal (for cassette)	AD		
C27				CN4	QPLGZ0020PAZZ	3-Pin terminal (for LED)	AD		
C31				CN5	QPLGZ0016PAZZ	18-Pin terminal (for Keyboard)	AF		
C33				CN6	QPLGN0403CEZZ	4-Pin terminal (for Power supply)	AB		
C34					QPWBN0024PAZZ	Printed Wiring Board	BS		
C35									
C40									
C42									
C58									
C60	VCTYPU1BD104Z	0.1MFD, 12V, Ceramic	AB						
C62									
C64									
C67									
C69									
C71									
C73									
C74									
C76									
C78									
C80									
C83									
C85									
C87					DPWB-0176PAZZ	Assembled Monitor TV PWB	BS		
C89									
C90									
C91									
C92									
C5	VCEAAU1CW105Y	1MFD, 16V, Aluminum	AB	I2001	RH-IX0015TAZZ	μPC1031H, Vertical deflection Circuit	AM		
C23				I2002	RH-IX0016TAZZ	LA4030P, Power Amp.	AK		
C6	VCKZPU1HF103P	0.01MFD, Ceramic	AA	<b>TRANSISTORS</b>					
C13				Q2001	VS2SC1514-/1E	2SC1514	AF		
C15				Q2002	VS2SA673-C/1E	2SA673	AC		
C16				Q2003					
C20	VCEAAU1CW106Y	10MFD, 16V, Aluminum	AB	Q2004	VS2SC1213-C1A	2SC1213	AC		
C14	VCEAAU1CW227Y	220MFD, 16V, Aluminum	AC	Q2005	VS2SC681A-R1A	2SC681A-R	AM		
C18									
C19	VCEAAU1CW226Y	22MFD, 16V, Aluminum	AB						
C21			AB						
C22	VCQYKU1HM103K	0.01MFD, Film	AB						
C26	VCEAAU1CW107Y	100MFD, 16V, Aluminum	AB						
C32									

# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE	
DIODES								
D2001	VHD02Z7R5A//A	7.5V Zener, 02Z75A	AC	R2046	RVR-B7032TAZZ	5K ohm, Variable Resistor for Volume	AD	
D2002	VHD1N34A///-1	1N-34A		R2047	VRD-ST2EF222J	2.2K ohm, 1/4W	AA	
D2003				R2048	VRD-ST2EF471J	470 ohm, 1/4W	AA	
D2004				R2049	VRD-ST2EF473J	47K ohm, 1/4W	AA	
D2005	RH-DX0039TAZZ	SI-RECT208	AC	R2051	VRD-ST2EF120J	12 ohm, 1/4W	AA	
D2008				CAPACITORS				
D2006				RH-DX0043TAZZ	SIR60	C2001	VCQYKU1HM152K	0.0015MFD, Mylar
D2009	C2002	VCQPSC2DA104K				0.1MFD, 200V, Film	AC	
D2007	RH-DX0062CEZZ			RH1	C2036			
					C2037			
RESISTORS								
R2001	VRD-ST2EF470J	47 ohm, 1/4W	AA	C2003	VCEAAU2CW106Y	10MFD, 160V, Aluminum	AE	
R2003				C2004	VCEAAU1CW478Y	4700MFD, 16V, Aluminum	AH	
R2004				C2005	VCEAAU1CW108Y	1000MFD, 16V, Aluminum	AD	
R2002	RVR-B0015PAZZ	500 ohm, Variable Resistor for Contrast		C2016				
R2005	VRC-MT2HG102J	1K ohm, 1/2W	AD	C2050	VCQYKU1HM332K	0.0033MFD, Mylar	AA	
R2006	VRD-ST2EF225J	2.2M ohm, 1/4W	AA	C2006				
R2007	VRD-ST2EF154J	150K ohm, 1/4W	AA	C2007	VCEAAU1EW475A	4.7MFD, 25V, Aluminum	AB	
R2050			C2008					
R2008	RVR-B7021TAZZ	250K ohm, Variable Resistor for Brightness	AD	C2012	VCSACU1VE105K	1MFD, 35V, Tantalum	AC	
R2009	VRD-ST2EF472J	4.7K ohm, 1/4W	AA	C2009	VCEAAU1CW226Y	22MFD, 16V, Aluminum	AC	
R2010	VRD-ST2EF473J	47K ohm, 1/4W	AA	C2010	VCQYKU1HM333K	0.033MFD, Mylar	AB	
R2011	VRD-ST2EF102J	1K ohm, 1/4W	AA	C2011				
R2024				C2030	RC-EZ0029TAZZ	22MFD, 16V, Aluminum	AC	
R2027				C2014	VCEABA1CW226M	22MFD, 16V, Aluminum	AC	
R2037				C2015	VCEAAU1AW107Y	100FMD, 10V, Aluminum	AB	
R2012	VRD-ST2EF153J	15K ohm, 1/4W	AA	C2017	RC-EZ0024TAZZ	6.8MFD, 25V, Aluminium	AG	
R2013	VRD-ST2EF123J	12K ohm, 1/4W	AA	C2018	VCQYKU1HM153K	0.015MFD, Mylar	AB	
R2014	VRD-ST2EF272J	2.7K ohm, 1/4W	AA	C2019				
R2015	VRC-MT2HG3R3J	3.3 ohm, 1/2W	AA	C2020	VCQYKU1HM683K	0.068MFD, Mylar	AB	
R2016	VRD-ST2EF273J	27K ohm, 1/4W	AA	C2021	VCEAAU1CW107Y	100MFD, 16V, Aluminum	AB	
R2017	RVR-B7029TAZZ	50K ohm, Variable Resistor for V-Hold	AD	C2022	VCQYKU1HM103K	0.01MFD, Mylar	AB	
R2018	VRD-ST2EF122J	1.2K ohm, 1/4W	AA	C2029				
R2019	VRD-ST2EF103J	10K ohm, 1/4W	AA	C2023	VCQYKU1HM223K	0.022MFD, Mylar	AB	
R2053				C2024	VCQYKU1HM473K	0.047MFD, Mylar	AB	
R2020				C2025	VCEAAU1EW335A	3.3MFD, 25V, Aluminum	AB	
R2021	VRC-MT2HG1R5J	1.5 ohm, 1/2W		AA	C2026	VCQYKU1HM123J	0.012MFD, Mylar	AB
R2022	RVR-M7052TAZZ	20K ohm, Variable Resistor for V-Size	AC	C2027	VCQYKU1HM473J	0.047MFD, Mylar	AB	
R2023	VRD-ST2EF331J	330 ohm, 1/4W	AA	C2028	VCCSPU1H6101K	100PF, 50V, Ceramic	AA	
R2026				C2032	VCKZPR1HF103P	0.01MFD, Ceramic	AA	
R2025				C2039				
	C2040							
R2028	VRD-ST2EF821J	820 ohm, 1/4W	AA	C2041				
R2029	VRD-ST2EF682J	6.8K ohm, 1/4W	AA	C2042	VCEAAU1CW227Y	220MFD, 16V, Aluminum	AB	
R2030				C2043				
R2031				C2044				
R2032	VRD-ST2EF822J	8.2K ohm, 1/4W		AA				C2046
R2033	VRD-ST2EF392J	3.9K ohm, 1/4W	AA	C2033	VCQPSC2DA683K	0.068MFD, 200V, Film	AB	
R2036				C2034	VCQPSC2DA223K	0.022MFD, 200V, Film	AB	
R2033	VRD-ST2EF330J	33 ohm, 1/4W		AA	C2035	VCQPSC2DA153K	0.015MFD, 200V, Film	AB
R2034	VRD-ST2EF332J	3.3K ohm, 1/4W	AA	C2038	VCEAAU1HW105A	1MFD, 50V, Aluminum	AB	
R2035				C2044	VCQYKU1HM472K	0.0047MFD, Mylar	AA	
R2038	VRD-ST2EF680J	68 ohm, 1/4W		AA	C2045	VCEAAU1CW227Y	220MFD, 16V, Aluminum	AB
R2039	VRS-PU3DB222J	2.2K ohm, 2W		AB	C2047			
R2040	VRD-ST2EF221J	220 ohm, 1/4W	AA	C2048	VCEAAU2AW227Y	220MFD, 100V, Aluminum	AF	
R2041	VRC-MT2HG560J	56 ohm, 1/2W	AA	C2049	VCEAAU1CW106Y	10MFD, 16V, Aluminum	AB	
R2042	VRC-MT2HG330J	33 ohm, 1/2W	AA	C2052	VCKYPU2HE103P	0.01MFD, 500V, Ceramic	AB	
R2043				C2053	VCQYKU1HM104K	0.1MFD, Mylar	AB	
R2044	RVR-B7022TAZZ	1M ohm, Variable Resistor for Focus		AD	TRANSFORMER AND COILS			
R2045	VRD-ST2EF564J	560K ohm, 1/4W		AA	T2001	RTRNT0017TAZZ	H-Drive Transformer	AF
				T2002	CTRNF2072TA01	High Voltage Transformer	AY	
				1	RCILH4070TAZZ	Refraction Coil	AX	

# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE			
L2001	RCILB0021TAZZ	H-Hold Variable Coil	AG	R404	VRW-KT3DDR05K	0.05 ohm, 2W, Cement	AC			
L2002	RCILZ0057TAZZ	H-Lin Coil	AG	R504						
				R405				VRD-ST2EF563J	56K ohm, 1/4W	AA
				R505						
				R407	VRD-ST2EF472J	4.7K ohm, 1/4W	AA			
				R408						
				R507						
				R508						
2	QSOCV0701SEZZ	CRT Socket	AC	R509	VRD-ST2EF153J	15K ohm, 1/4W	AA			
	QPLGN0404CEZZ	4-Pin Plug	AB	R409						
	QSOCN0077PAZZ	Lead Wire with 6-Pin Socket	AH	R410				VRD-ST2EF332J	3.3K ohm, 1/4W	AA
	QCNW-0009PAZZ	Lead Wire with 2-Pin Socket (to Speaker)	AD	R510				VRD-ST2EF392J	3.9K ohm, 1/4W	AA
	3	GCABC8004PASC	TV Cabinet	BC	VR201	RVR-M0010PAZZ	1K ohm, Variable Resistor	AC		
4	GWAKP0001PASC	Front Frame	AS	VR401						
5	GCOVZ0005PAZZ	Front Panel	AN	VR501						
6	LANGB0002PAZZ	Support Angle A	AE	<b>CAPACITORS</b>						
7	LANGB0003PAZZ	Support Angle B	AF	C101	△ RC-CZ0174PAZZ	0.047MFD, 250V, Mylar	AK			
8	DDAI-0004PAZZ	PWB Mounting Plate	AR	C201	VCEAAU1CM228Y	2200MFD, 16V, Aluminum	AF			
9	PSHEF0007PAZZ	Guard Net for Speaker	AB	C404						
10	LANGQ0005PAZZ	Display PWB Fixing Angle	AB	C202	VCEAAU1AM477M	470MFD, 10V, Aluminum	AD			
11	LANGS0003PAZZ	Speaker mounting Plate	AD	C301	VCEAAU1VM258Y	2500MFD, 35V, Aluminum	AG			
12	LANGS0013CEZZ	Speaker Holder	AB	C302						
13	△ VB240NB4//K1E	CRT	BM	C303						
14	VSP0080P-16YA	Speaker	AQ	C304						
15	PFTA-0001PASC	Back Panel	AH	C401	VCSACU1VE106M	10MFD, 35V, Tantalum	AE			
	HINDP0005PASA	Indicator Panel of Control Knob	AE	C501						
16	MSPRT0011PAZZ	Spring	AB	C502	VCQYKU1HM332K	0.0033MFD, 50V, Film	AA			
				C402						
				C403	VCQYKU1HM223K	0.022MFD, 50V, Film	AB			
				C405	VCQYKU1HM183K	0.018MFD, 50V, Film	AB			
				C506						
				C508	VCQYKU1HM102K	0.001MFD, 50V, Film	AA			
				C406						
				C504	VCKYPU1NB104Z	0.1MFD, 12V, Ceramic	AB			
				C505						
				C407	VCEAAU1AM338Y	3300MFD, 10V, Aluminum	AF			
				C503						
				C507						
				AN	<b>COILS AND TRANSFORMER</b>					
				AC	L201	RTRNZ0010PAZZ	Filter Coil	AH		
					L401	RTRNZ0007PAZZ	Choke Coil	AP		
					L502					
					L402	RTRNZ0009PAZZ	Filter Coil	AL		
					L501					
				AE	L503					
				AT	T101	△ RTRNP0018PAZZ	Power Supply Transformer 220V	BF		
				AT	T101	△ RTRNP0019PAZZ	Power Supply Transformer 240V (for UK)	BF		
				AK						
					<b>MISCELLANEOUS</b>					
						△ QPWB0260PAZZ	Printed Wiring Board	AM		
				AA	F101	△ QFS-C0002PAZZ	Fuse, T500mA	AD		
					F201					
				AA	F202	△ QFS-C0001PAZZ	Fuse, T315mA	AD		
					F401	△ QFS-C0003PAZZ	Fuse, T1.6A	AD		
					F501					
						QFSHC0001PAZZ	Fuse Holder	AD		
				AA		QFSHA0001PAZZ	Fuse Holder	AA		
					17	△ QSOCA0001PAZZ	A.C. Socket	AD		
					18	△ QSW-C0003PAZZ	A.C. Switch	AQ		
					17	△ QSOCA0002PAZZ	A.C. Socket (for UK)	AG		

# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
19	GCABA8018PASA	Cabinet	AK	<b>CAPACITORS</b>			
20	GCABB8018PASA	Cabinet	AT	C3001	VCEAAU1AW476Y	47MFD, 10V, Aluminum	AB
	GCABB8019PASA	Cabinet (for UK)	AQ	C3002	VCQYKU1HM104K	0.1MFD, Mylar	AB
	PRDAR0010PAZZ	Radiator	AF	C3004			
21	DSOCN0016PAZZ	Lead Wire with 4-pin Socket	AF	C3006			
				C3008			
22	LBSHC0003PAZZ	Rubber Bush	AB	C3003	VCEAAU1AW106Y	10MFD, 10V, Aluminum	AB
23	△ PSPAY0001PAZZ	Insulating Sheet	AF	C3005	VCQYKU1HM102K	1000PF, Mylar	AA
				C3007			
				C3009	VCEAAU1AW226Y	22 MFD, 10V, Aluminum	AB
				<b>MISCELLANEOUS</b>			
					QPWBF0259PAZZ	Printed Wiring Board	AF
				SW3001	QSW-S0011VAZZ	Slide Switch (2 contacts).	AG
				24	KMECA0001PAZZ	Cassette Tape Recorder	BG
						Machinical Unit (Refer to other table for detailed parts)	
				25	GCABE8004PASA	Cabinet	AP
				26	JKNBR0002PASA	Button	AC
				27	GFTAC0001PASA	Flap	AN
				28	HINDM0006PASA	Indicator Plate of Function Buttons	AG
				29	HDECB0010PASA	Plate	AC
				30	MSPRP0089AGFW	Crossarm Brace	AB
				31	MSPRB0029PAFJ	Spring	AA
				32	QSOCN0078PAZZ	Lead Wire with 6-Pin Socket	AH



# PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
<b>MISCELLANEOUS</b>				53	LHLDW9003CEZZ	Cord Fixer, HW-146	AA
43	QPWBF0172PAZZ	Printed Wiring Board for LED	AB		TINSG0002PAZZ	Instruction Manual (Germany)	BG
44	QSOCN0080PAZZ	Lead Wire with 3-Pin Socket	AE		TINSE0001PAZZ	Instruction Manual (English)	BG
45	DCABA8042PASA	Cabinet	BL		TINSF0001PAZZ	Instruction Manual (French)	AD
46	GCABB8017PASA	Cabinet	BD	54	HINDP0010PASA	Key Seal (letters with unlaut)	AD
47	DANG-0006PAZZ	Arm Fixing Angle with Screw	AE	55	HINDM0007PASA	Decoration Panel	AK
48	LHLDF0011PAZZ	CPU Board Holder	AB		PCOVF0015PAZZ	Cover	AG
49	GLEGR0001PAZZ	LEG	AB				
50	MHNG-0001PAFC	Hinge	AQ				
51	MARMM0019PAFC	Support Arm	AQ				
	QACCK0050AFZZ	A.C. Cord	AQ				
	QACCB0001PAZZ	A.C. Cord (for UK)	AQ				
52	LBNDCC0001PAZZ	Cord Keeper	AC				

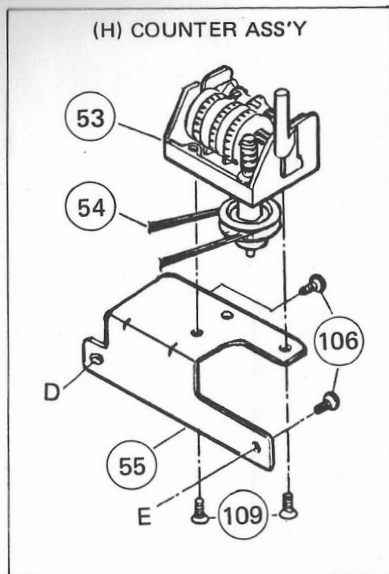
(Note)

Be sure to use genuine parts for securing the safety and reliability of the set.

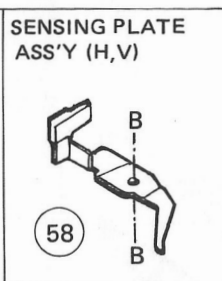
Parts marked with "△" and parts shaded (in black) are especially important for maintaining the safety and protecting ability of the set.

Be sure to replace them parts of specified part number.

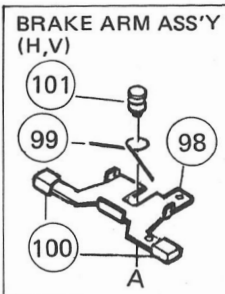
(H) COUNTER ASS'Y



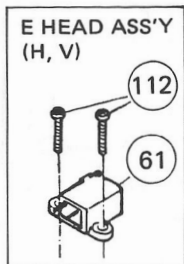
SENSING PLATE ASS'Y (H,V)



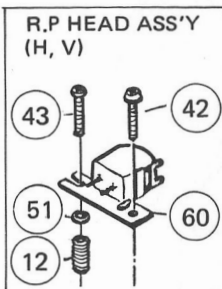
BRAKE ARM ASS'Y (H,V)



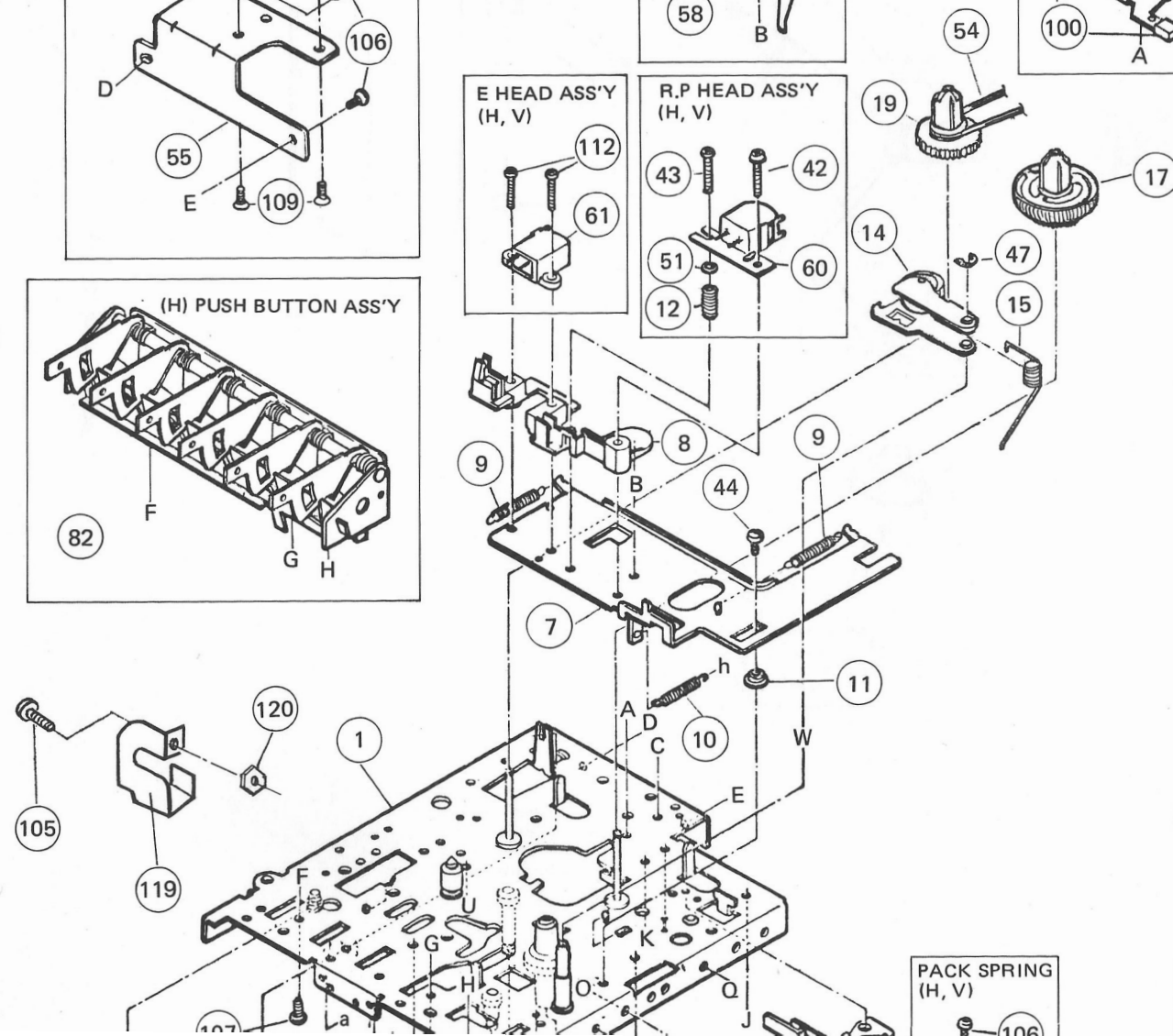
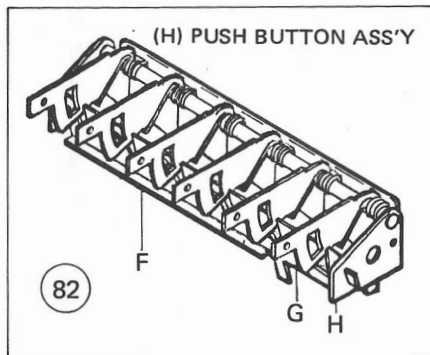
E HEAD ASS'Y (H, V)



R.P HEAD ASS'Y (H, V)



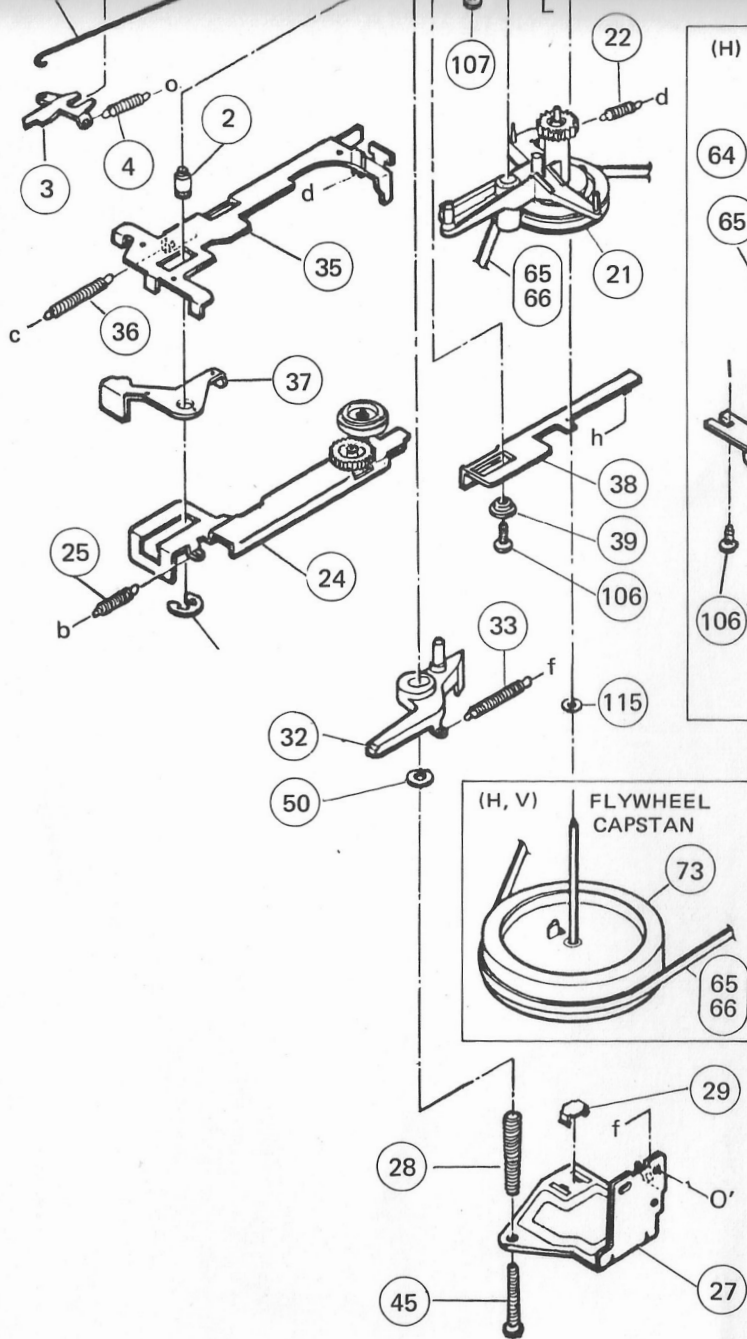
(H) PUSH BUTTON ASS'Y



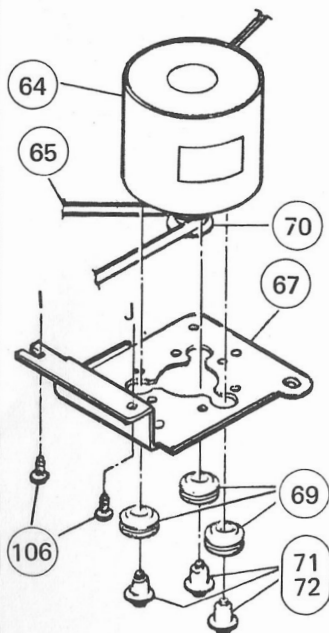
Cassette tape recorder mechanical parts

REF. NO.	PART NO.	DESCRIPTION	CODE
2	94R00280KCTRM	Main Boss	AB
3	94R00380KCTRM	Record Safety Lever	AC
4	94R00480KCTRM	Spring	AB
5	94R00580KCTRM	Record Safety Spoke Ass'y	AD
8	94R00880KCTRM	Head Block	AD
9	94R00980KCTRM	Spring	AB
10	94R01080KCTRM	Spring	AD
11	94R01180KCTRM	Spring	AD
12	94R01280KCTRM	Spring	AD
13	94R01380KCTRM	Spring	AD
14	94R01480KCTRM	Spring	AD
15	94R01580KCTRM	Spring	AD
16	94R01680KCTRM	Spring	AD
17	94R01780KCTRM	Spring	AD
18	94R01880KCTRM	Spring	AD
19	94R01980KCTRM	Spring	AD
20	94R02080KCTRM	Spring	AD
21	94R02180KCTRM	Spring	AD
22	94R02280KCTRM	Spring	AD
23	94R02380KCTRM	Spring	AD
24	94R02480KCTRM	Spring	AD
25	94R02580KCTRM	Spring	AD
26	94R02680KCTRM	Spring	AD
27	94R02780KCTRM	Spring	AD
28	94R02880KCTRM	Spring	AD
29	94R02980KCTRM	Spring	AD
30	94R03080KCTRM	Spring	AD
31	94R03180KCTRM	Spring	AD
32	94R03280KCTRM	Spring	AD
33	94R03380KCTRM	Spring	AD
34	94R03480KCTRM	Spring	AD
35	94R03580KCTRM	Spring	AD
36	94R03680KCTRM	Spring	AD
37	94R03780KCTRM	Spring	AD
38	94R03880KCTRM	Spring	AD
39	94R03980KCTRM	Spring	AD
40	94R04080KCTRM	Spring	AD
41	94R04180KCTRM	Spring	AD
42	94R04280KCTRM	Spring	AD
43	94R04380KCTRM	Spring	AD
44	94R04480KCTRM	Spring	AD
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150	94R15080KCTRM	Spring	AD

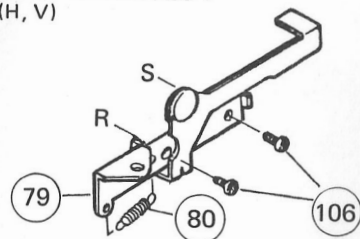




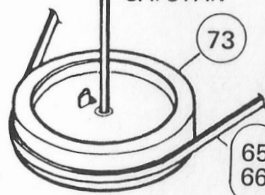
(H) MOTOR BRACKET ASS'Y



EJECT LEVER ASS'Y  
(H, V)



(H, V) FLYWHEEL  
CAPSTAN



17	94R01780KCTRM	Take-up Reel Ass'y	AF
19	94R01980KCTRM	Supply Reel Ass'y	AN
21	94R02180KCTRM	RF Clutch Ass'y	AB
22	94R02280KCTRM	Spring	AB
24	94R02480KCTRM	F.F. Idler Arm Ass'y	AL
25	94R02580KCTRM	Spring	AB
27	94R02780KCTRM	Flywheel Holder	AF
28	94R02880KCTRM	Thrust Spring	AB
29	94R02980KCTRM	Flywheel Bearing	AA
32	94R03280KCTRM	Auto-Stop Lever	AD
33	94R03380KCTRM	Spring	AB
35	94R03580KCTRM	Main Plate	AF
36	94R03680KCTRM	Spring	AB
37	94R03780KCTRM	Rewind Arm	AC
38	94R03880KCTRM	Play Slide Lever	AC
39	94R03980KCTRM	Collar	AA
40	94R04080KCTRM	Leaf Switch	AG
53	94R05380KCTRM	Counter	AM
54	94R05480KCTRM	Counter Belt	AF
58	94R05880KCTRM	Sensing Plate Ass'y	AF
60	94R06080KCTRM	R/P Head	AM
61	94R06180KCTRM	Erase Head	AG
62	94R06280KCTRM	Pack Spring	AD
64	94R06480KCTRM	Motor	AV
65	94R06580KCTRM	Main Belt	AH
69	94R06980KCTRM	Motor Rubber	AA
70	94R07080KCTRM	Motor Pulley	AD
72	94R07280KCTRM	Collar Screw(s)	AB
73	94R07380KCTRM	Flywheel Capstan	AP
79	94R07980KCTRM	Eject Lever Ass'y	AK
80	94R08080KCTRM	Spring	AB
82	94R08280KCTRM	Push Button Ass'y	AW
98	94R09880KCTRM	Brake Arm	AD
99	94R09980KCTRM	Spring	AB
100	94R10080KCTRM	Brake Shoe	AB
101	94R10180KCTRM	Brake Arm Shaft	AB
115	94R11580KCTRM	Nylon Washer 2.2 x 7 x 0.5	AA
119	94R11980KCTRM	REC Push Plate	AC

nd reliability of  
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of the set.

CODE	
AA	Germany)
BG	English)
AD	French)
AK	Italian)
AG	

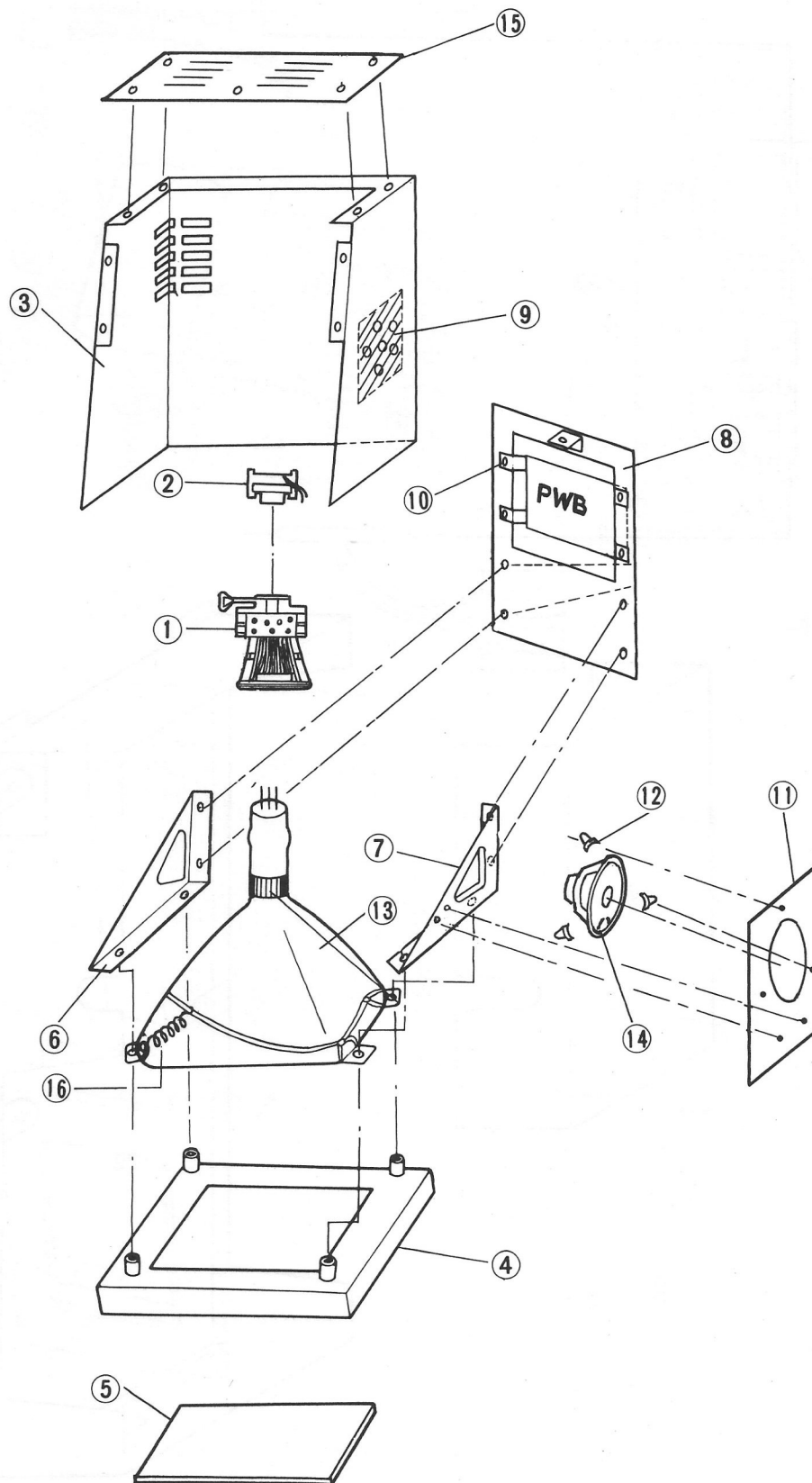


Fig. Display Section

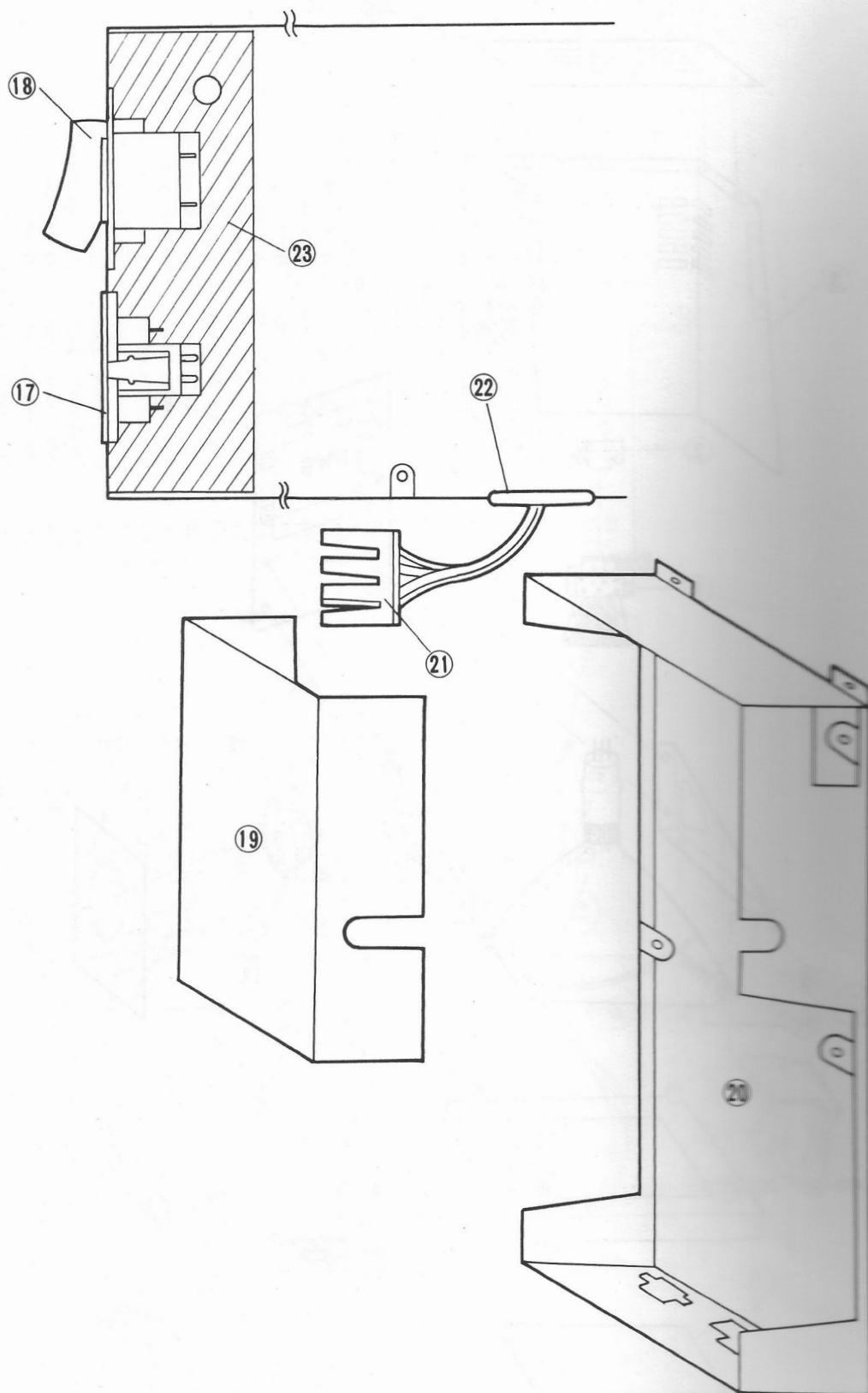


Fig. Power Supply Section

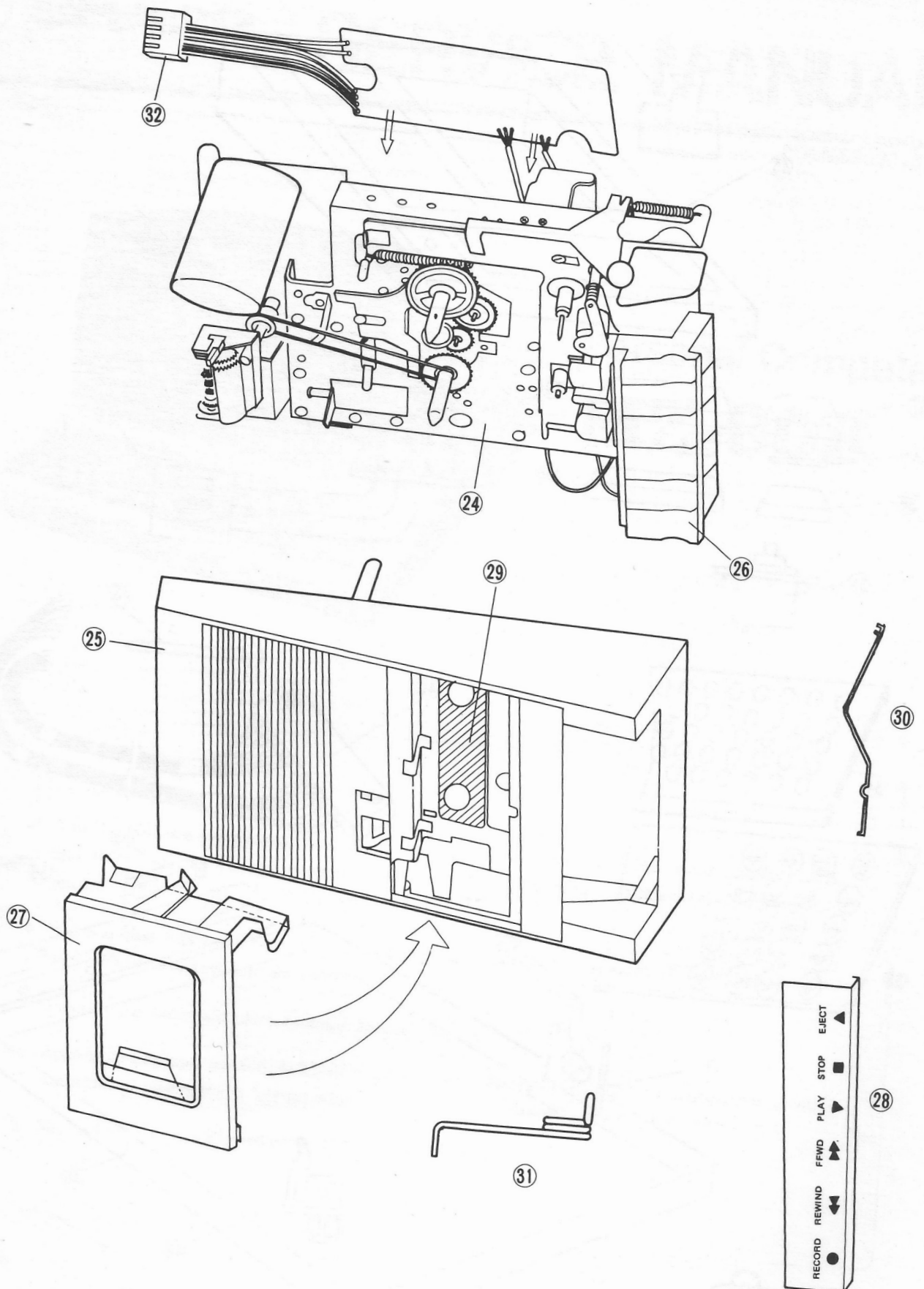


Fig. Cassette Tape Recorder Section

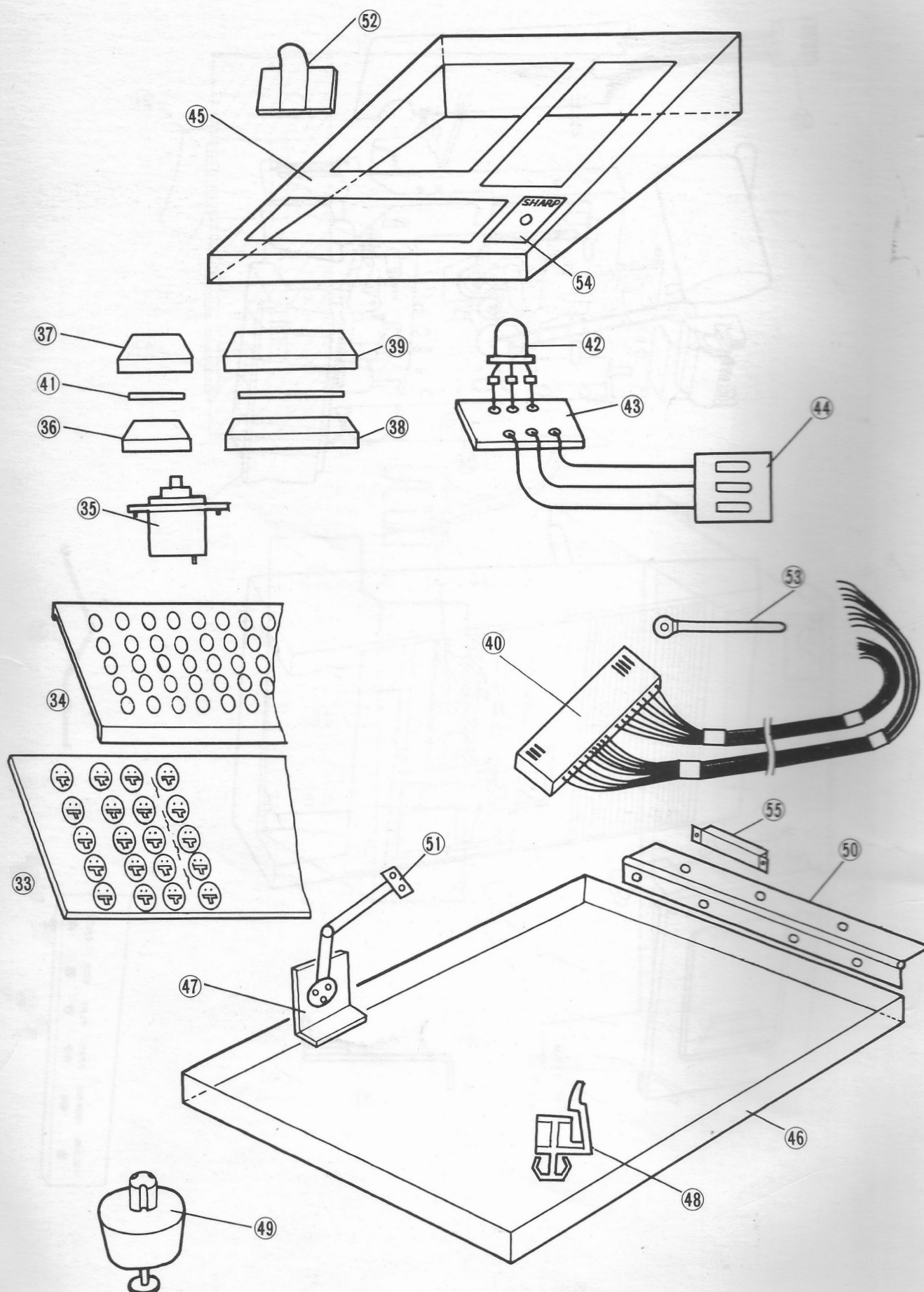


Fig. Key Board Section and Others